technology | safety | experience

PRODUCT CATALOGUE 2013

Twenty years of experience,
leading position in the market as a
manufacturer & provider of
comprehensive solutions & systems for fibre optics,
guarantee of success and satisfaction
for existing and future customers.

OPTOMER

TECHNIKA ŚWIATŁOWODOWA

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12. GLOSSARY

13. INDEX

FIELD OF APPLICATION ICONS

TELECOM	TELECOMMUNICATIONS
ACCESS	ACCESS NETWORKS
CATV	CABLE TV
MAN	METROPOLITAN AREA NETWORKS
WAN	WIDE AREA NETWORKS
LAN	LOCAL AREA NETWORK
FTTx	FIBRE TO THE X (OFFICE, HOME, DESK)
PON	PASSIVE OPTICAL NETWORKS
xWDM	WDM, CWDM, DWDM NETWORKS
Industry	POWER AND MINING INDUSTRIES, AUTOMATICS AND CONTROL, MILITARY APPLICATIONS
	AERIAL APPLICATIONS
	FIBRE TO THE ANTENNA
	INTERNAL APPLICATIONS
	EXTERNAL APPLICATIONS

STANDARDS AND CERTIFICATES

The products listed in this catalogue are compliant with the following standards:

FIBRE DISTRIBUTION EQUIPMENT
- EN ETS 300119, PN-EN 60825-2:2005, ITU-L.50. ZN-06 TP S.A.-009

OUTSIDE PLANT EQUIPMENT
- EN 50411-2-4, PN-EN 60825-2:2005, ZN-96/TP S.A. -008

FIBRE OPTIC CONNECTORS
- E-2000 (LSH)
- ZN-05 TP SA-044
- IEC 61754-15

SC
- ZN-05 TP SA-044
- IEC 61754-4

FC
- ZN-05 TP SA-044
- IEC 61754-13

ST
- ZN-05 TP SA-044
- IEC 61754-2

SMA
- ZN-05 TP SA-044
- IEC 61754-22

MTRJ
- ZN-05 TP SA-044
- IEC 61754-18

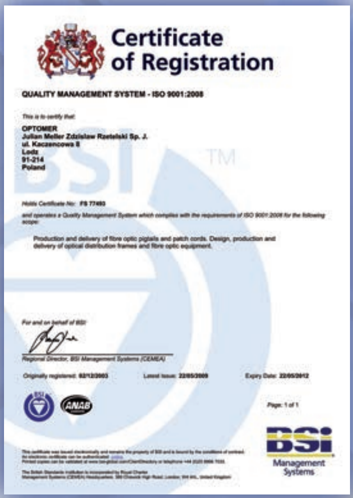
LC
- ZN-05 TP SA-044
- IEC 61754-20

MU
- ZN-05 TP SA-044
- IEC 61754-6

F-3000
- ZN-05 TP SA-044
- IEC 61754-20

SAFETY OF FIBRE OPTIC TELECOMMUNICATION SYSTEMS
- EN60825-2

* OPTOMER reserves the right to modify the products without the negative influence on their performance.



Certificate of Registration

QUALITY MANAGEMENT SYSTEM - ISO 9001:2008

This is to certify that:

OPTOMER
Julian Meller Zdzislaw Rzetelski Sp. J.
ul. Kaczencowa 8
Lodz
91-214
Poland

Holds Certificate No: FS 77493

and operates a Quality Management System which complies with the requirements of ISO 9001:2008 for the following scope:

Production and delivery of fibre optic pigtails and patch cords. Design, production and delivery of optical distribution frames and fibre optic equipment.

For and on behalf of BSI:

Regional Director, BSI Management Systems (CEMEA)

Originally registered: 02/12/2003 Latest Issue: 22/05/2009 Expiry Date: 22/05/2012

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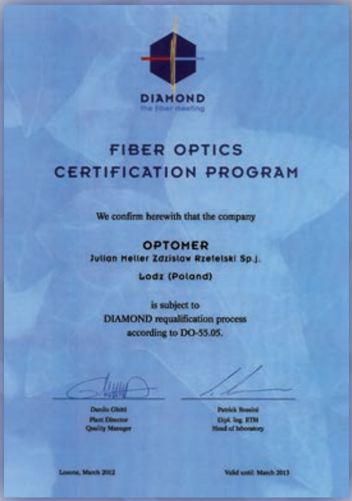
BSI Management Systems



DIAMOND
the fiber meeting

FIBER OPTICS
CERTIFICATION PROGRAM

We confirm herewith that the company

OPTOMER
Julian Meller Zdzislaw Rzetelski Sp.j.
Lodz (Poland)

is subject to
DIAMOND requalification process
according to DO-55.05.

Danilo Ghiti
Plant Director
Quality Manager

Patrick Rossini
Dipl. Ing. ETH
Head of laboratory

Losone, March 2012

Valid until: March 2013

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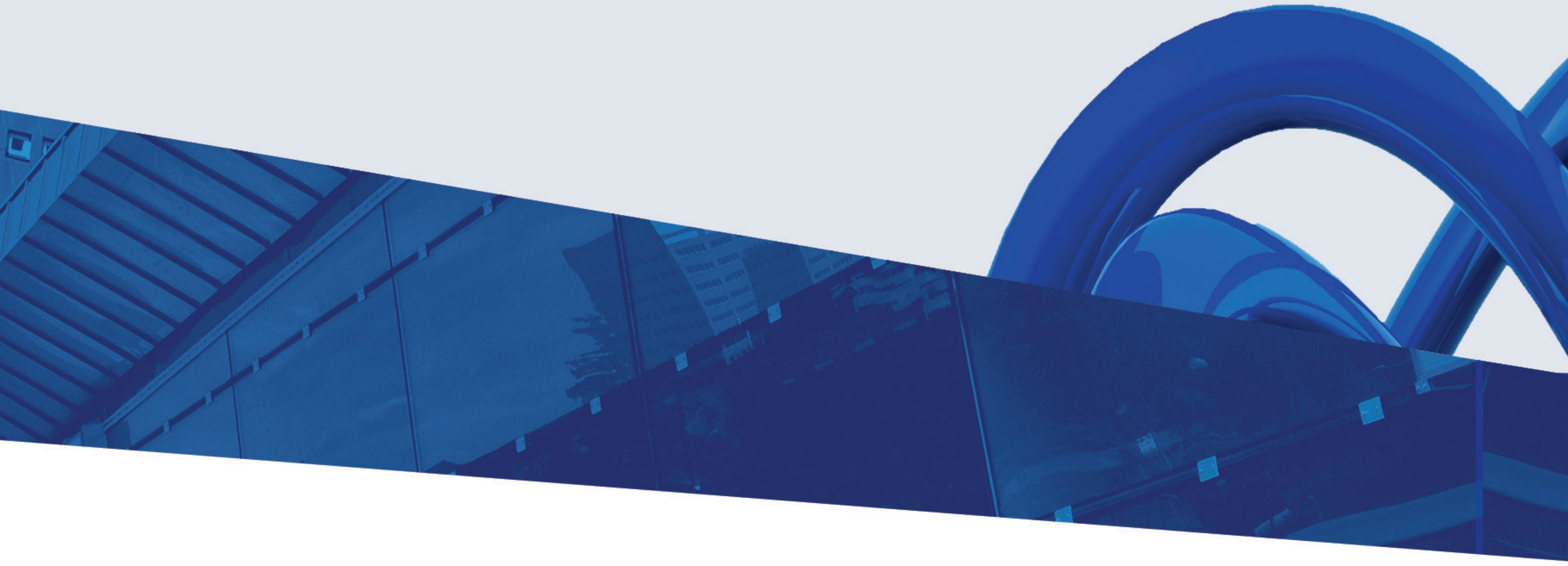
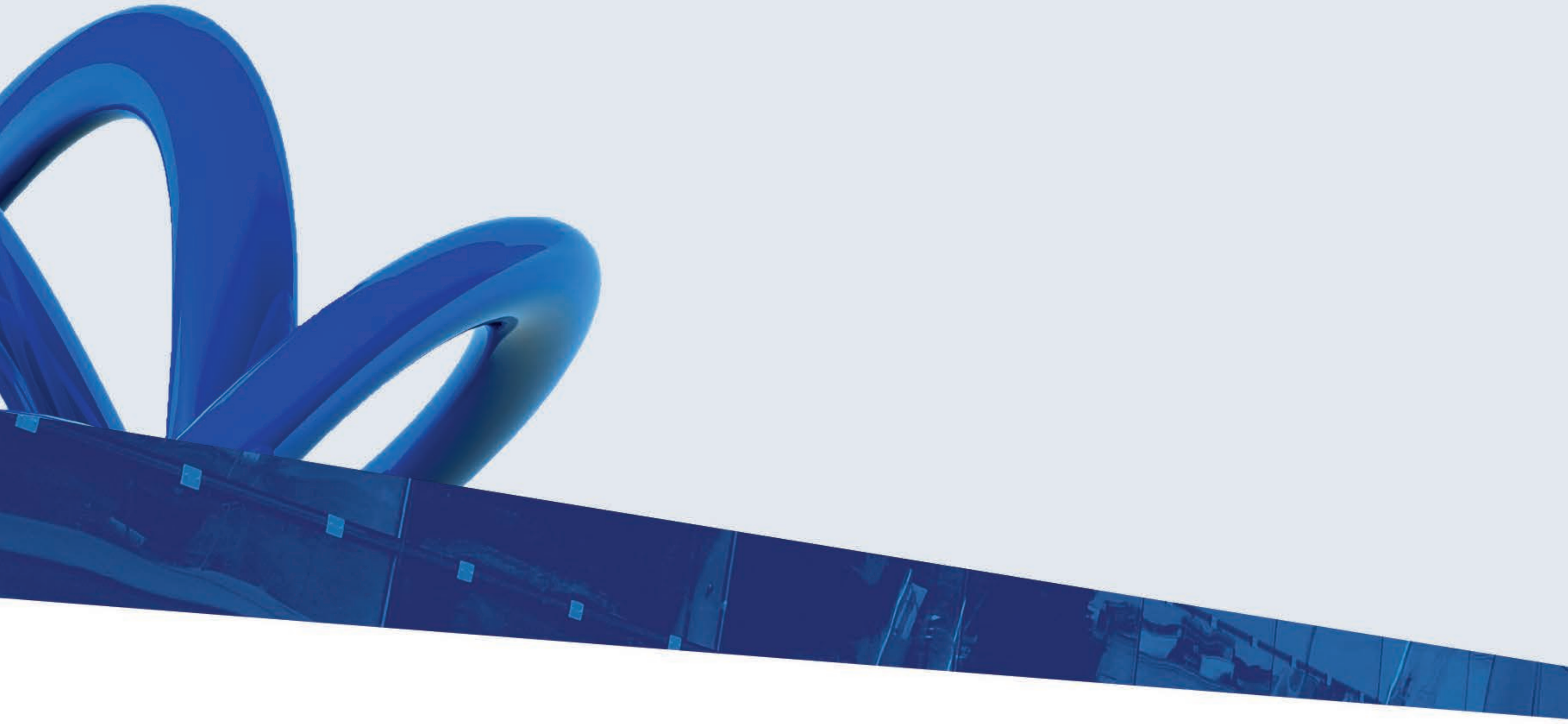


The rapid development of fibre optic technology, the use of next-generation technical solutions in optical telecommunication and the increasing complexity of modern optical fibre communication systems, require application of a very high performance fibre optic connectors and adapters. These components play a very important role, particularly in high connector capacity ODFs and whenever there is a need of frequent reconnections. This is the case in fibre optic access networks, where the optical fibre is deployed from central office through an outside plant network components, to the street cabinets or directly to the subscriber.

The linking mechanism in the majority of fibre optic connectors is based on interfacing the fibres fixed in cylindrical zirconia ceramic ferrules mated in high precision alignment sleeves. To ensure precise fibre core positioning in a ferrule, the ideal concentricity of a fibre in a ferrule bore is required. The entire manufacturing process is focused on maintaining a very high precision of fibre positioning in a ferrule bore and a high quality of ferrule endface polishing.

Moreover, OPTOMER offers fibre optic cable assemblies terminated with DIAMOND connectors equipped with hybrid ferrules using Active Core Alignment technology and high performance connectors with fully ceramic ferrules.

INTERCONNECT COMPONENTS



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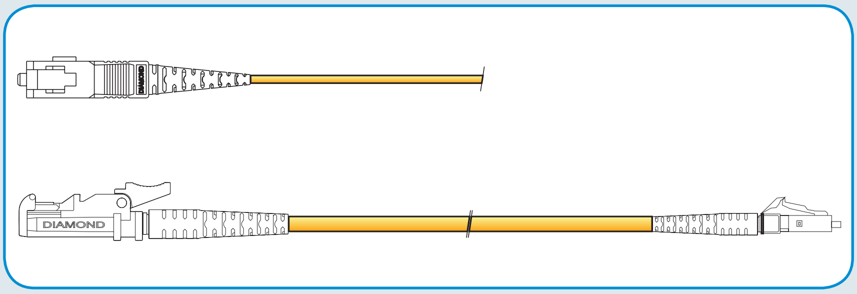
PIGTAILS AND PATCHCORDS

PIGTAIL

one end terminated cable

PATCHCORD

both ends terminated cable



CONNECTOR STANDARDS:

- E-2000/PC SM
- E-2000/APC SM
- E-2000 0.1dB SM*
- E-2000 PS SM**
- E-2000 IP65*
- E-2000 MM
- SC/PC SM
- SC/APC SM
- SC MM
- FC/PC SM
- FC/APC SM
- ST/PC SM
- ST/APC SM
- F-3000/PC SM
- F-3000/APC SM
- F-3000/APC 0.1dB SM*
- LC/PC SM
- LC/APC SM
- MU/APC SM
- MU/PC SM
- MU/PC MM
- MTRJ/male
- MTRJ/female
- DIN/PC SM
- FSMA/PC SM

* - connector with improved transmission characteristics
** - connectors dedicated for transmission of up to 3W optical power

CABLE DIAMETERS:

0.9 mm	tight buffered fibre
0.9 mm EasyStrip	easy-strip buffered fibre
2.0 mm / 2x2.0 mm	2.0 mm simplex/duplex cable
2.4 mm / 2x2.4 mm	2.4 mm simplex/duplex cable
3.0 mm / 2x3.0 mm	3.0 mm simplex/duplex cable

OPTICAL FIBRE STANDARDS:

SM (G652D)	singlemode 9 µm	yellow
MM 50 (G651) OM2	multimode 50 µm	orange
MM 50 (G651) OM3	multimode 50 µm	light blue
MM 62.5 (G651) OM1	multimode 62.5 µm	green
SM Jn (G655)	singlemode fibre non-zero dispersion shifted	brown
SM Jp (G653)	singlemode fibre dispersion shifted	red
SM XB (G657)	singlemode fibre bending loss insensitive	grey/white
POF	plastic optical fibre	black

PIGTAILS AND PATCHCORDS

CONFIGURATION:

A - connector type no 1
B - connector type no 2 (only for patchcords)
C - the length of cable or buffered fibre
D - SM - singlemode 9 µm
D - MM - multimode 62.5 µm or 50 µm
E - the cable diameter - S - cable outer diameter: 2.0 mm, 2.4 mm, 2.8 mm or 3.0 mm
E - the cable diameter - T - buffered fibre 900 µm
E - the cable diameter - S62 - for multimode fibre 62.5 µm cable outer diameter: 2.0 mm, 2.4 mm, 2.8 mm or 3.0 mm
E - the cable diameter - T62 - multimode fibre 62.5 µm buffered fibre 900 µm
E - the cable diameter - S50 - for multimode fibre 50 µm cable outer diameter: 2.0 mm, 2.4 mm, 2.8 mm or 3.0 mm
E - the cable diameter - T50 - multimode fibre 50 µm buffered fibre 900 µm
G - 1J - SIMPLEX SM - singlemode simplex cable
G - 2J - DUPLEX SM - singlemode duplex cable
G - 1G - SIMPLEX MM - multimode simplex cable
G - 2G - DUPLEX MM - multimode duplex cable
G - 4J, 6J, 8J, 12J, 18J, 24J, 48J lub 4G, 6G, 8G, 12G, 18G, 24G, 48G - for multi-fibres cables, singlemode or multimode

PIGTAIL	A	B	C	D	E	G
PATCHCORD	E2A	SCA	0.5	SM	S	1J

EXAMPLES OF CONFIGURATIONS:

SC/05/MM/S62/1G	Pigtail MM SC 5 m cable 2.0 mm 1G 62.5 µm
E2A/E2P/10/SM/S/1J	Patchcord SM E-2000/APC - E-2000/PC DIAMOND 10 m cable 2.0 mm
SCA/SCP/16/SM/S/1J	Patchcord SM SC/APC - SC/PC 16 m cable 2.0 mm
SCA/LCP/05/SM/S/2J	Patchcord SM SC/APC - LC/PC 5 m duplex cable 2.0 mm
SC8/SC8/04/SM/S/1J	Patchcord SM SC/APC - SC/APC DIAMOND 4 m cable 2.0 mm

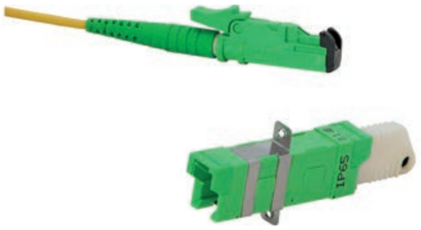
CONNECTOR STANDARD:

E2A	E-2000/APC DIAMOND
E2P	E-2000/PC DIAMOND
E2AR	E-2000/APC 0.1dB DIAMOND
F3P	F-3000/APC DIAMOND
F3A	F-3000/PC DIAMOND
F3AR	F-3000/APC 0.1dB DIAMOND
SCA	SC/APC
SCP	SC/PC
SC8	SC/APC DIAMOND
SC0	SC/PC DIAMOND
SC	SC MM
FC8	FC/APC DIAMOND
FC0	FC/PC DIAMOND
FCP	FC/PC
FCA	FC/APC
STP	ST/PC
ST0	ST/PC DIAMOND
LCP	LC/PC
LCA	LC/APC
MUP	MU/PC

E-2000 DIAMOND CONNECTORS AND ADAPTERS

OPTOCODE A1010

E-2000 DIAMOND connectors and adapters



Adapter E-2000 IP65

FEATURES:

- assembled according to Active Core Alignment technology
- high performance of 0.1 dB APC connectors due to the light emission angle control and application of high precision adapter sleeves.
- adapters E-2000 IP65 designed to meet binding requirements, reliability and safety in uncontrolled environments
- adapters E-2000 IP65 recommended for use in mining and petrochemical industries as well as in telecommunication systems located in harsh environments, guarantees splash-proof and dust-proof connections
- comply with the standards: EN60825-1, EN60825-2 (eye protection), IEC61754-15, ZN-05/TP S.A.-044
- available in MM, SM, PC, APC and in duplex versions

TECHNICAL SPECIFICATIONS:

connector type	E-2000 DIAMOND			E-2000 0.1dB DIAMOND	test conditions
	MM PC 0°	SM PC 0°	SM APC 8°	SM APC 8°	
insertion loss IL [dB]	0.15	0.15	0.15	0.15	IEC 61300-3-4; l=1300/1550 nm
return loss RL [dB]	40	50	70	85	IEC 61300-3-6; l=1300/1550 nm
repeatability of IL [dB]	±0.1	±0.1	±0.1	±0.1	over service life
service life	over 1000 mate/demate cycles				
operating temperature [°C]	– 40 to +85				depending on cable specification
ferrule diameter [mm]	2.5	2.5	2.5	2.5	
code	E2	E2P	E2A	E2AR	

ORDERING:

E-2200.2-22 - adapter simplex E-2000/APC SM

E2A/02.5/SM/T/1J - pigtail E-2000/APC SM L=2.5 m cable 900 µm SM

E2AIP - adapter simplex E-2000/APC SM IP65

E-2000 PS DIAMOND CONNECTORS AND ADAPTERS

OPTOCODE A1030

FEATURES:

- the E-2000 PS System is designed for high power applications up to 3 Watts optical power
- developed to support the continuous rise of higher bit rates and longer transmission distances, within DWDM technology, and is based on expanded beam technology
- a section of graded index fibre is introduced as a collimating lens, which enlarges the beam diameter and reduces power density at the connector interface
- all of the features of the E-2000 family, are available from the E-2000 PS, including: ease of installation, integrated protection caps, color coding, mechanical keying and excellent vibration resistance
- angle of polishing is 4°
- comply with the standards: EN60825-1, EN60825-2 (eye protection), IEC61754-15, ZN-05/TP S.A.-044

E-2000 PS DIAMOND connectors and adapters

TECHNICAL SPECIFICATIONS:

connector type	E-2000 PS DIAMOND	test conditions
	SM APC 4°	
insertion loss IL [dB]	0.2	IEC 61300-3-4; l=1300/1550 nm
return loss RL [dB]	85	IEC 61300-3-6; l=1300/1550 nm
repeatability of IL [dB]	±0.1	over service life
service life	over 1000 mate/demate cycles	
operating temperature [°C]	– 40 to +85	depending on cable specification
ferrule diameter [mm]	2.5	
code	E2APS	

ORDERING:

E-2201.2 PS - adapter simplex E-2000/APC PS

TELECOM ACCESS CATV MAN WAN LAN FTTx PON xWDM Industry

OPTOCODE A1040

F-3000 DIAMOND CONNECTORS AND ADAPTERS

FEATURES:

- assembled according to Active Core Alignment technology
- small-form-factor construction, ferrule 1.25 mm
- provide the highest transmission and operating parameters
- comply with the standards: EN60825-1, EN60825-2 (eye protection), IEC61754-20, ZN-05/TP S.A.-044
- available in PC and APC versions, and in duplex construction
- fully LC standard compatible

TECHNICAL SPECIFICATIONS:

connector type	F-3000 DIAMOND		F-3000 0.1dB DIAMOND		test conditions
	SM PC 0°	SM APC 8°	SM PC 0°	SM APC 8°	
insertion loss IL [dB]	0.15	0.15	max. 0.1	max. 0.1	IEC 61300-3-4; l=1300/1550 nm
return loss RL [dB]	50	70	50	85	IEC 61300-3-6; l=1300/1550 nm
repeatability of IL [dB]	±0.1	±0.1	±0.1	±0.1	over service life
service life	over 1000 mate/demate cycles				
operating temperature [°C]	– 40 to +85				depending on cable specification
ferrule diameter [mm]	1.25	1.25	1.25	1.25	
code	F3P	F3A	F3PR	F3AR	

F-3000 DIAMOND connectors and adapters

ORDERING:

F-3108.6/APC - adapter simplex F-3000/APC SM
F3A/02/SM/T/1J - pigtail F-3000/APC SM buffered fibre 900 µm G.652.D L=2 m

OPTOCODE A1050

LC CONNECTORS AND ADAPTERS

FEATURES:

- small-form-factor construction, ferrule 1.25 mm
- comply with the standards: IEC 61754-20, PN-EN50377-7-4, ZN-05/TP S.A.-044, ZN-05/TP S.A.-044
- available in PC and APC versions, and in duplex construction

TECHNICAL SPECIFICATIONS:

connector type	LC			test conditions
	MM PC 0°	SM PC 0°	SM APC 8°	
insertion loss IL [dB]	0.15	max. 0.1	max. 0.1	IEC 61300-3-4; l=1300/1550 nm
return loss RL [dB]	50	50	70	IEC 61300-3-6; l=1300/1550 nm
repeatability of IL [dB]	±0.1	±0.1	±0.1	over service life
service life	over 1000 mate/demate cycles			
operating temperature [°C]	– 40 to +85			depending on cable specification
ferrule diameter [mm]	1.25	1.25	1.25	
code	LC	LCP	LCA	

LC connectors and adapters

ORDERING:

ALC/PC SM - adapter simplex LC/PC SM
LCP/02/SM/T/1J - pigtail LC/PC SM, buffered fibre 900 µm G.652.D, L=2 m

TELECOM ACCESS CATV MAN WAN LAN FTTx PON xWDM Industry

OPTOCODE A1060

MU CONNECTORS AND ADAPTERS

FEATURES:

- small-form-factor construction, ferrule 1.25 mm
- comply with the standards: IEC 61754-6
- available in PC and APC versions, and in duplex construction

TECHNICAL SPECIFICATIONS:

connector type	MU			test conditions
	MM PC 0°	SM PC 0°	SM APC 8°	
insertion loss IL [dB]	0.15	0.2	0.2	IEC 61300-3-4; l=1300/1550 nm
return loss RL [dB]	40	50	70	IEC 61300-3-6; l=1300/1550 nm
repeatability of IL [dB]	±0.1	±0.1	±0.1	over service life
service life	over 1000 mate/demate cycles			
operating temperature [°C]	– 40 to +85			depending on cable specification
ferrule diameter [mm]	1.25	1.25	1.25	
code	MU	MUP	MUA	

MU connectors and adapters

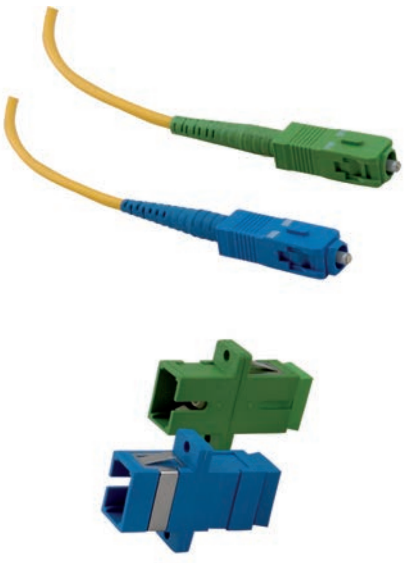
ORDERING:

AMU/PC SM - adapter simplex MU/PC SM
MUP/02.5/SM/T/1J - pigtail MU/PC SM, buffered fibre 900 µm G.652.D, L=2.5 m

TELECOM ACCESS MAN WAN LAN FTTx PON xWDM Industry

SC DIAMOND CONNECTORS AND ADAPTERS

OPTOCODE A1070



SC DIAMOND connectors and adapters

FEATURES:

- assembled according to Active Core Alignment technology
- provide the highest transmission and operating parameters
- comply with the standards: IEC-61754-4, PN-EN186260:2000, ZN-05/TP S.A.-044
- available in MM, SM, PC and APC versions, and in duplex construction

TECHNICAL SPECIFICATIONS:

connector type	SC DIAMOND		test conditions
	SM PC 0°	SM APC 8°	
insertion loss IL [dB]	0.15	0.1	IEC 61300-3-4; l=1300/1550 nm
return loss RL [dB]	50	70	IEC 61300-3-6; l=1300/1550 nm
repeatability of IL [dB]	±0.1	±0.1	over service life
service life	over 1000 mate/demate cycles		
operating temperature [°C]	– 40 to +85		depending on cable specification
ferrule diameter [mm]	2.5	2.5	
code	SC0	SC8	

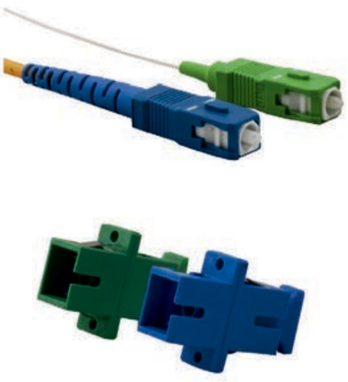
ORDERING:

MSC-S0.2 - adapter simplex SC/PC Diamond SM

SC8/02/SM/T/1J - pigtail SC/APC Diamond SM, buffered fibre 900 µm G.652.D, L=2 m

SC MONOBLOK CONNECTORS AND ADAPTERS

OPTOCODE A1080



SC connectors and adapters

FEATURES:

- monoblock connector with zirconia ceramic ferrule
- comply with the standards IEC-61754-4, PN-EN186260:2000, ZN-05/TP S.A.-044
- available in MM, SM, PC and APC versions, and in duplex construction

TECHNICAL SPECIFICATIONS:

connector type	SC			test conditions
	MM PC 0°	SM PC 0°	SM APC 8°	
insertion loss IL [dB]	0.2	0.2	0.15	IEC 61300-3-4; l=1300/1550 nm
return loss RL [dB]	40	55	65	IEC 61300-3-6; l=1300/1550 nm
repeatability of IL [dB]	±0.1	±0.1	±0.1	over service life
service life	over 1000 mate/demate cycles			
operating temperature [°C]	– 40 to +85			depending on cable specification
ferrule diameter [mm]	2.5	2.5	2.5	
code	SC	SCP	SCA	

ORDERING:

ASC/PC SM - adapter simplex SC/PC SM

SCP/02.5/SM/T/1J - pigtail SC/APC SM, buffered fibre 900 µm G.652.D, length 2.5 m

TELECOM ACCESS CATV MAN WAN LAN FTTx PON xWDM Industry

OPTOCODE A1090

FC DIAMOND CONNECTORS AND ADAPTERS

FEATURES:

- assembled according to Active Core Alignment technology
- provide the highest transmission and operating parameters
- comply with the standards: IEC 61754-13, PN-EN50377-2-1, ZN-05/TP S.A.-044
- available in PC and APC versions, and in duplex construction

TECHNICAL SPECIFICATIONS:

connector type	FC DIAMOND		test conditions
	SM PC 0°	SM APC 8°	
insertion loss IL [dB]	0.2	0.2	IEC 61300-3-4; l=1300/1550 nm
return loss RL [dB]	50	70	IEC 61300-3-6; l=1300/1550 nm
repeatability of IL [dB]	±0.1	±0.1	over service life
service life	over 1000 mate/demate cycles		
operating temperature [°C]	– 40 to +85		depending on cable specification
ferrule diameter [mm]	2.5	2.5	
code	FC0	FC8	

FC DIAMOND connectors and adapters

ORDERING:

MPC-S0.22 - adapter simplex FC/PC SM Diamond D-flange

FC0/02/SM/S/1J - pigtail FC/PC SM Diamond, buffered fibre 900 µm, L=2 m

OPTOCODE A1100

FC MONOBLOK CONNECTORS AND ADAPTERS

FEATURES:

- monoblock connector with zirconia ceramic ferrule
- comply with the standards: IEC 61754-13, PN-EN50377-2-1, ZN-05/TP S.A.-044
- available in MM, SM, PC and APC versions

TECHNICAL SPECIFICATIONS:

connector type	FC			test conditions
	MM PC 0°	SM PC 0°	SM APC 8°	
insertion loss IL [dB]	0.2	0.2	0.15	IEC 61300-3-4; l=1300/1550 nm
return loss RL [dB]	40	55	65	IEC 61300-3-6; l=1300/1550 nm
repeatability of IL [dB]	±0.1	±0.1	±0.1	over service life
service life	over 1000 mate/demate cycles			
operating temperature [°C]	– 40 to +85			depending on cable specification
ferrule diameter [mm]	2.5	2.5	2.5	
code	FC	FCP	FCA	

connectors and adapters FC

ORDERING:

AFC/PC SM - adapter simplex FC/PC SM D-flange

FCP/02.5/SM/T/1J - pigtail FC/PC SM, buffered fibre 900 µm, L=2.5 m

TELECOM ACCESS CATV MAN WAN LAN FTTx PON Industry

ST DIAMOND CONNECTORS AND ADAPTERS

OPTOCODE A1110

ST DIAMOND connectors and adapters

FEATURES:

- assembled according to Active Core Alignment technology
- provide the highest transmission and operating parameters
- comply with the standards: IEC 61754-2, ZN-05/TP S.A.-044
- available in SM PC version

TECHNICAL SPECIFICATIONS:

connector type	ST DIAMOND	test conditions
	SM PC 0°	
insertion loss IL [dB]	0.2	IEC 61300-3-4; l=1300/1550 nm
return loss RL [dB]	55	IEC 61300-3-6; l=1300/1550 nm
repeatability of IL [dB]	±0.1	over service life
service life	over 1000 mate/demate cycles	
operating temperature [°C]	– 40 to +85	depending on cable specification
ferrule diameter [mm]	2.5	
code	ST0	

ORDERING:

MST-S0.2 - adapter simplex ST/PC SM Diamond

ST0/02/SM/S/1J - pigtail ST/PC SM Diamond, buffered fibre 900 µm G.652.D, L=2.5 m

LAN FTTx PON Industry

ST MONOBLOK CONNECTORS AND ADAPTERS

OPTOCODE A1120

ST connectors and adapters

FEATURES:

- monoblock connector with zirconia ceramic ferrule
- comply with the standards: IEC 61754-2, ZN-05/TP S.A.-044
- available in MM and SM PC versions

TECHNICAL SPECIFICATIONS:

connector type	ST		test conditions
	MM PC 0°	SM PC 0°	
insertion loss IL [dB]	0.2	0.2	IEC 61300-3-4; l=1300/1550 nm
return loss RL [dB]	40	55	IEC 61300-3-6; l=1300/1550 nm
repeatability of IL [dB]	±0.1	±0.1	over service life
service life	over 1000 mate/demate cycles		
operating temperature [°C]	– 40 to +85		depending on cable specification
ferrule diameter [mm]	2.5	2.5	
code	ST	STP	

ORDERING:

AST/PC SM - adapter simplex ST/PC SM

STP/02.5/SM/T/1J - pigtail ST/PC SM, buffered fibre 900 µm G.652.D, L=2.5 m

LAN FTTx PON Industry

OPTOCODE A1130

MT-RJ CONNECTORS AND ADAPTERS

FEATURES:

- available in versions: male, female
- comply with the standards: IEC 61754-18, EN 50377-9-1, EN 50377-9-2
- available in MM and SM PC versions

TECHNICAL SPECIFICATIONS:

connector type	MT-RJ		test conditions
	MM PC 0°	SM PC 0°	
insertion loss IL [dB]	0.3	0.3	IEC 61300-3-4; l=1300/1550 nm
return loss RL [dB]	35	45	IEC 61300-3-6; l=1300/1550 nm
repeatability of IL [dB]	±0.1	±0.1	over service life
service life	over 1000 mate/demate cycles		
operating temperature [°C]	– 40 to +85		depending on cable specification
ferrule diameter [mm]	-	-	
code	MTRJ	MTRJP	

ORDERING:

AMTRJ-F-SM - adapter MTRJ/PC SM

MTRJ/MTRJ/03/MM/S50/2G - patchcord duplex MTRJ-MTRJ MM both female, cable duplex 2.0 mm MM OM2. L=3 m

LAN FTTx PON Industry

MT-RJ connectors and adapters

OPTOCODE A1140

DIN, FSMA CONNECTORS AND ADAPTERS

FEATURES:

- used in measuring, medical and industrial equipment
- comply with the standards: CECC 86 135-801 (PC polished), CECC86 135-802 (APC polished)

TECHNICAL SPECIFICATIONS:

connector type	DIN			FSMA
	MM PC0°	SM PC0°	SM APC8°	MM PC0°
insertion loss IL [dB]	typ. 0.15; max. 0.4	typ. 0.2; max. 0.4	typ. 0.2; max. 0.4	typ. 0.6
return loss RL [dB]	min. 40	typ. 50	min. 70	typ. 12
repeatability of IL [dB]	max. ± 0.1			± 0.2

ORDERING:

D-4106,66- - DIN connector

HMS-10.6/AG - FSMA connector

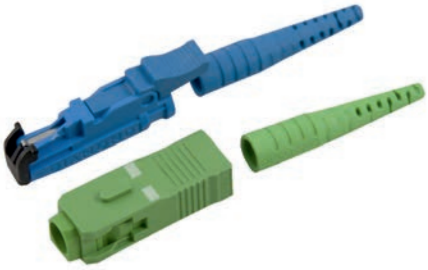
TELECOM Industry

DIN connectors and adapters

FSMA connector and adapter

FUSION CONNECTORS

OPTOCODE A1150



E2000. SC housing for FUSION connector

FEATURES:

- the FUSION connector system allows quick and easy field termination of high performance connectors
- with the performance expect from the highest quality connectors.
- the ferrule assembly consists of a factory-terminated fibre endface, fibre stub, and integrated splice protection.
- the fibre endface is core-centered via well-known Active Core Alignment process and factory-polished to the company's precise specifications.
- the FUSION connector are field terminated via a low loss fusion splice using the new ZEUS D50 Fusion Field Termination Kit.
- the FUSION connectors are available for SM and MM fibre (250 µm, 600 µm & 900 µm) and cable (1.6 to 3.1 mm) in both 0° PC or 8° APC versions.
- comply with the standards: IEC 61754-20. EN60825-1, EN60825-2 (eye protection), IEC61754 norms

TECHNICAL SPECIFICATIONS:

connector type	E-2000, SC, FC, ST DIAMOND FUSION			test conditions
	MM PC 0°	SM PC 0°	SM APC 8°	
insertion loss IL [dB]	0.2	0.2	0.25	IEC 61300-3-4; l=1300/1550 nm
return loss RL [dB]	40	50	70	IEC 61300-3-6; l=1300/1550 nm
repeatability of IL [dB]	±0.1	±0.1	±0.1	over service life
service life	over 1000 mate/demate cycles			
operating temperature [°C]	–25 to +70			depending on cable specification
ferrule diameter [mm]	2.5			
code	-	-	-	

ferrule for the FUSION connector

ORDERING:

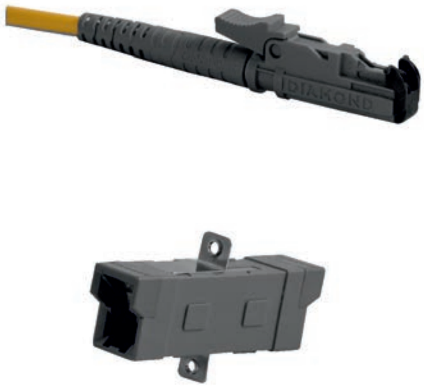
E-2000/APC CDR/3000 - E2000/APC for splicing on 3 mm cable

CRIMP&CLEAVE DIAMOND CONNECTORS

OPTOCODE A1160

FEATURES:

- The Crimp & Cleave system is designed for field termination connectors E2000. SC, FC, ST of 200/230 micron HCS-fibre.
- Typical uses include point to point installations over short distance requiring low data rate transmission, industrial applications such as machine controls or sensors.



CRIMP&CLEAVE DIAMOND connector

TECHNICAL SPECIFICATIONS:

connector type	Crimp&Cleave - E-2000, SC, FC, ST	test conditions
	MM PC 0°	
insertion loss IL [dB]	typ. 0.8	IEC 61300-3-4; l=1300/1550 nm
return loss RL [dB]	-	IEC 61300-3-6; l=1300/1550 nm
repeatability of IL [dB]	±0.2	over service life
service life	over 1000 mate/demate cycles	
operating temperature [°C]	– 40 to +85	depending on cable specification
ferrule diameter [mm]	2.5	
code	-	

ORDERING:

E-2000 Crimp&Cleave connector

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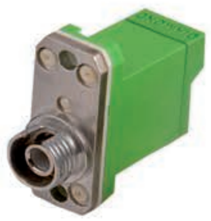
CONNECTORS AND ADAPTERS SUMMARY

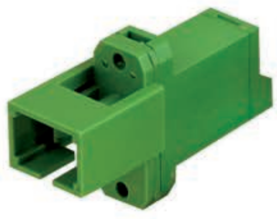
connector type		insertion loss IL [dB]	return loss RL [dB]	repeatability of IL [dB]	service life	operating temperature [°C]	ferrule diameter [mm]	code	OPTOCODE
E-2000 DIAMOND	MM PC 0°	0.15	40	±0.1	over 1000 mate/demate cycles	– 40 to +85	2.5	E2	A1010
	SM PC 0°	0.15	50	±0.1				E2P	
	SM APC 8°	0.15	70	±0.1				E2A	
E-2000 0.1 dB DIAMOND	SM APC 8°	0.15	85	±0.1				E2AR	
E-2000 PS DIAMOND	SM APC 4°	0.2	85	±0.1				E2APS	A1030
F-3000 DIAMOND	SM PC 0°	0.15	50	±0.1			1.25	F3P	A1040
	SM APC 8°	0.15	70	±0.1				F3A	
F-3000 0.1 dB DIAMOND	SM PC 0°	max. 0.1	50	±0.1				F3PR	
	SM APC 8°	max. 0.1	85	±0.1				F3AR	
LC	MM PC 0°	0.15	50	±0.1				LC	A1050
	SM PC 0°	max. 0.1	50	±0.1				LCP	
	SM APC 8°	max. 0.1	70	±0.1				LCA	
MU	MM PC 0°	0.15	40	±0.1				MU	A1060
	SM PC 0°	0.2	50	±0.1				MUP	
	SM APC 8°	0.2	70	±0.1				MUA	
SC DIAMOND	SM PC 0°	0.15	50	±0.1			2.5	SC0	A1070
	SM APC 8°	0.1	70	±0.1				SC8	
SC	MM PC 0°	0.2	40	±0.1				SC	A1080
	SM PC 0°	0.2	55	±0.1				SCP	
	SM APC 8°	0.15	65	±0.1				SCA	
FC DIAMOND	SM PC 0°	0.2	50	±0.1				FC0	A1090
	SM APC 8°	0.2	70	±0.1				FC8	
FC	MM PC 0°	0.2	40	±0.1				FC	A1100
	SM PC 0°	0.2	55	±0.1				FCP	
	SM APC 8°	0.15	65	±0.1				FCA	
ST DIAMOND	SM PC 0°	0.2	55	±0.1				ST0	A1110
ST	MM PC 0°	0.2	40	±0.1				ST	A1120
	SM PC 0°	0.2	55	±0.1				STP	
MT-RJ	MM PC 0°	0.3	35	±0.1			-	MTRJ	A1130
	SM PC 0°	0.3	45	±0.1			-	MTRJP	
E-2000. SC, FC, ST DIAMOND FUSION	MM PC 0°	0.2	40	±0.1		–25 to +70	2.5	-	A1150
	SM PC 0°	0.2	50	±0.1				-	
	SM APC 8°	0.25	70	±0.1				-	
"Crimp&Cleave - E-2000. SC, FC, ST"	MM PC 0°	typ. 0.8	-	±0.2		– 40 to +85	2.5	-	A1160
test conditions		IEC 61300-3-4; l=1300/1550 nm	IEC 61300-3-6; l=1300/1550 nm	over service life		depending on cable specification			

HYBRID ADAPTERS

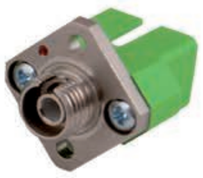
OPTOCODE A1170



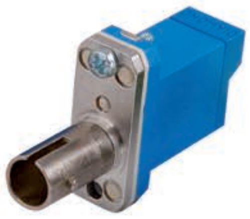
HYB. E-2000/FC SM APC hybrid adapter



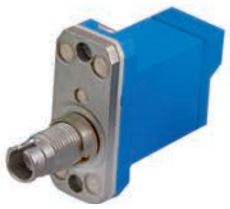
HYB.SC/E-2000 SM APC hybrid adapter



HYB. FC/SC SM APC hybrid adapter



HYB. E-2000/ST SM PC hybrid adapter



HYB. E-2000/DIN SM PC hybrid adapter

FEATURES:

- hybrid adapters are used to mate various connector standards, while keeping the angle of polishing
- the new generation of ceramic centering sleeves
- also available in male-female versions

TECHNICAL SPECIFICATIONS:

adapter - side A		E2000	SC	FC	DIN	ST	LC
adapter - side B		SC		SC	SC		
		FC	FC		FC	FC	
		ST	ST	ST	ST		
		DIN	DIN	DIN		DIN	MU
type		APC	APC	APC	APC		
		PC	PC	PC	PC	PC	PC
the centering sleeve		ceramic					
housing colour	APC	green	green	nickel-plated bronze			-
	UPC	blue	blue				blue
dimensions of the hole, where is mounted adapter [mm]		9.2 x 13.3	9,5 x 13.1	ø9.0	4.5 x ø5.5	7.8 x ø9.7	7.1 x 11.7
operating temperature [°C]		– 40 to + 85					

ORDERING:

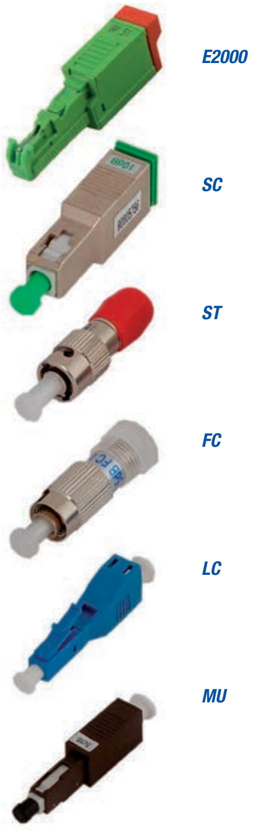
HYB.FC-SC/PC - hybrid adapter FC-SC/PC - fixing acc. FC standard

HYB.SC-FC/APC - hybrid adapter SC-FC/APC - fixing acc. SC standard

TELECOM ACCESS CATV MAN WAN LAN FTTx PON xWDM Industry

OPTOCODE A1190

FIBRE OPTIC ATTENUATORS



FEATURES:

- attenuators are used to adapt the transmitted light power to the characteristics of the implanted receiver
- available in SM, PC and APC versions
- available in male-male and male-female versions

TECHNICAL SPECIFICATIONS:

	attenuator E-2000. SC, FC, ST, LC, MU								
	SM PC 0°				SM APC 8°				
wavelength [nm]	1310/1550								
attenuation [dB]	2	4	5	6	10	15	20	25	30
return loss RL [dB]	45				70				
service life	over 1000 mate/demate cycles								
operating temperature [°C]	- 40 to +85								

*attenuators are also available for attenuations: 1, 2, 3, 4, 5, 10, 15, 20, 25, 30 dB

ORDERING:

TL-SCP-SM-10dB - attenuator SC/PC 10dB

TL-SC0-SM-10dB - attenuator SC/APC 10dB

TELECOM ACCESS CATV MAN WAN xWDM

OPTOCODE A1180

FIBRE OPTIC TERMINATORS

FEATURES:

- prevent the reflection of light that are present at open end systems

	E-2000. F-3000. SC, FC		test conditions
	SM PC 0°	SM APC 8°	
insertion loss IL [dB]	0.15	0.2	IEC 61300-3-4; l=1300/1550 nm
return loss RL [dB]	45	70	IEC 61300-3-6; l=1300/1550 nm
repeatability of IL [dB]	over 500 mate/demate cycles		
service life	±0.1		over service life
operating temperature [°C]	- 40 to +85		

fibre optic terminator SC

ORDERING:

OTM E2000/APC - fibre optic terminator E2000/APC

TELECOM ACCESS CATV MAN WAN FTTx PON xWDM

MULTIPIGTAILS, MULTIPATCHCORDS

OPTOCODE A1200

multipigtail 6-fibres, PSKD cable

multipigtail 24-fibres, mini-breakout cable

multipatchcord 24-fibres, breakout cable

FEATURES:

- cable bundles, can be terminated by E-2000, SC, LC, FC or ST connectors
- eliminate the need for splicing or mechanical connecting fibres in the field
- reduction of costs
- cable bundle can be protected by tubes or splittable corrugated tubes
- different configurations of endings - e.g. cascade
- available cable bundles:
  - breakout - 2.0 mm cable inside - indoor application
  - mini-breakout - buffered fibres 0.9 mm inside - indoor application
  - PSKD - buffered fibres 0.9 mm inside - outdoor application

TECHNICAL SPECIFICATIONS:

	multipigtail	multipatchcord
side A	E-2000, SC, FC, ST, LC	E-2000, SC, FC, ST, LC
side B	-	E-2000, SC, FC, ST, LC
cable	PSKD	
	breakout (cables 2.0 mm)	
	mini breakout (tube 0.9 mm - W-STAC 0.9)	
number of fibres	4J, 6J, 8J, 12J, 18J, 24J, 48J, 4G, 6G, 8G, 12G, 18G, 24G, 48G	
fibre standard	SM or MM	
length [m]	from 1.5 m	
endings length [m]	minimum 0.5	

CONFIGURATION:

A	B	C	D	E	F	DESCRIPTION
WK						cable bundle
	E2A					multipigtail E-2000/APC
	E2A	E2A				multipatchcord E-2000/APC
	SCA	SCA				multipatchcord SC/APC
	SCP	SCP				multipatchcord SC/PC
	LCP	LCP				multipatchcord LC/PC
			4J			4-fibres
			6J			6-fibres
			12J			12-fibres
			24J			24-fibres
			48J			48-fibres
				from 1.5 m		total length
					SM	type of SM fibre
					MM	type of MM fibre

* length should be defined when ordering

ORDERING:

WK/E2A/E2A/24J/25/SM - cable bundle - multipatchcord 24xE-2000/APC - 24xE-2000/APC, length: 25 m

TELECOM ACCESS CATV MAN WAN LAN FTTx PON xWDM Industry

OPTOCODE A1210

MULTIPURPOSE PIGTAIL

FEATURES:

- connection of bare fibre to test and measurement devices or directly to telecommunication equipment
- no need to use fibre cutter
- available polished PC or APC in connectors standards: SC, FC, ST for SM and MM fibres

EQUIPMENT:

- patchcord
- adapter for bare fibre

TECHNICAL SPECIFICATIONS:

	PW-MM	PW-SM
type of fibre	multimode 62.5/125 µm	singlemode 9/125 µm
pigtail length	1	
insertion loss IL [dB]	typ. < 0.5 dB	
return loss RL [dB]	< 45 dB	
adapter standard	SC, FC, ST	
service life	min. 1000	
operating temperature [°C]	-10 to +30	

TELECOM Industry

PW-SM Multipurpose Pigtail

ORDERING:

PW-SM-SC - multipurpose pigtail

OPTOCODE A1220

OTDR DEAD ZONE FIBRE BOX

FEATURES:

- OTDR dead zone fibre is delivered wound on a drum, tight-buffered fibre 900 µm in length up to 2000 m or cable 2.0 mm up to 200 m
- can be terminated with W-2000, SC, FC, ST or LC connectors

ORDERING:

WR-1/SC/2000 - the drum of OTDR dead zone fibre tight-buffered 900 µm, terminated with SC/PC connectors, length: 2000 m

TELECOM CATV MAN WAN xWDM

OTDR dead zone fibre

PSB FIBRE OPTIC EXTENSION CORD

OPTOCODE A1230

PSB fibre optic extension cord

FEATURES:

- enables multiple winding and unwinding, and the safe use of fibre optic cable
- available connectors standards: E-2000, SC, FC, ST, LC
- one end of cable can be fixed permanently with patching plate to PSB, the second end can be protected by special tube to unwind

TECHNICAL SPECIFICATIONS:

	PSB	
cable length	500	200
cable diameter	7	10
adapter capacity	12	
connector standard	E-2000, SC, FC, ST, F-3000, LC	
dimensions: width/height/depth [mm]	510/700/250	

ORDERING:

PSB fibre optic extension cord, L=500 m, cable PSKD 12FO, 12xSC/APC

TELECOM CATV LAN FTTx PON Industry

BZK FIBRE OPTIC CABLE EXTENSION DRUM

OPTOCODE A1240

BZK fibre optic extension drum

FEATURES:

- allows for storage of large length of cable
- can store different cable bundles, multipatchcords, multipigtails
- should be moved by 2 people

TECHNICAL SPECIFICATIONS:

	BZK	
cable length	1000	700
cable diameter	7	10
dimensions: width/height/depth [mm]	800/580/510	

ORDERING:

BZK - 1000 m

TELECOM CATV LAN FTTx PON Industry

INDUSTRIAL CONNECTORS

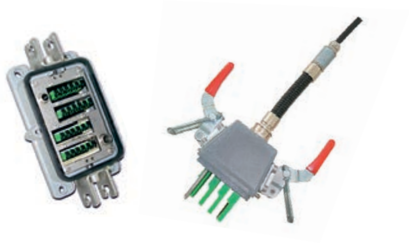
E-2000 RHA connector

- industrial applications such as field bus systems, machine controls and LAN installations requiring high data rate or bandwidth transmission in a harsh environment
- leverages all the mechanical and optical performances as well as safety features
- rugged IP65 rated enclosure
- connector with Active Core Alignment
- integrated caps and shutters
- wide operating range
- self aligning, keyed housing
- connector can be terminated on most types of HCS, MM, and SM fibre

E-2000 RHA connector

E-2000 RHB connector

- typical applications include high data rate transmission, automation control, and offshore device termination in an outdoor, unprotected, and unregulated environment
- RHB can be quickly and reliably field terminated via Fusion or Crimp & Cleave field termination systems
- RHB modular design allows for fibre counts from 6 to 24 (in 6 fibre increments) and can be terminated on most types of HCS, MM, and SM fibre
- connectors are available in both PC and APC finishes providing both low insertion and high return loss
- rugged IP65 rated enclosure
- PG 29 cable entry (16-27.5 mm OD cable)



E-2000 RHB connector

F-3000 CRB connector

- CRB connector system comes in either a single or dual channel configuration and provides exceptional optical performance in a robust, water and shock resistant VG 95234 compliant housing
- CRB connector can be terminated on most MM and SM cable constructions
- available with Active Core Alignment in both PC and APC finishes providing both low insertion and high return loss
- CRB connector leverages all the mechanical and optical performances as well as safety features
- rugged IP65 rated enclosure

F-3000 CRB connector

X-BEAM connector

- X-BEAM is a genderless tactical fibre optic connector which uses lens based expanded beam technology for ease of cleaning and mating in outdoor applications
- X-BEAM expands and collimates the transmission signal at the mating point
- the expanded beam technology reduces the impact of both misalignment as well as endface contamination
- the lens system encloses and protects the fibre end face allowing the connector to be quickly cleaned and mated in the field without special tools

X-BEAM connector

TECHNICAL SPECIFICATIONS:

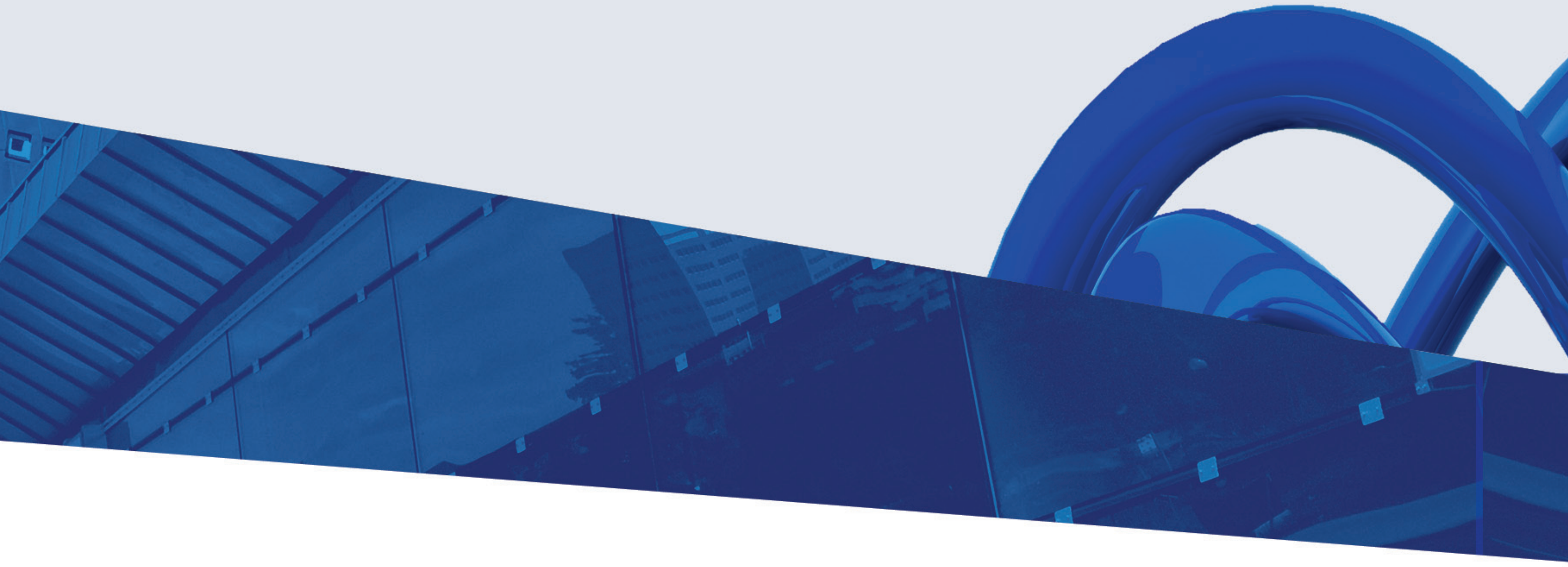
	E-2000 RHA			E-2000 RHB			F-3000 CRB			X-BEAM
	MM PC	SM PC	SM APC	MM PC	SM PC	SM APC	MM PC	SM PC	SM APC	MM
insertion loss IL [dB]	0.15	0.2	0.2	0.15	0.2	0.2	0.15	0.2	0.2	0.7
return loss RL [dB]	40	50	70	40	50	70	40	50	70	18
repeatability of IL [dB]	±0.1			±0.1						±0.1
service life	over 500 mate/demate cycles									over 2500 mate/ demate cycles
operating temperature [°C]	- 40 to +85									from - 50 to +65
number of fibres	2-4			6, 12, 18, 24			1, 2			4
ingress protection	IP65	IP65	IP65	IP65	IP65	IP65	IP65	IP65	IP65	IP65
OPTOCODE	1250			1260			1270			A1280

ORDERING:

E-2000 RHA/4 - industrial connector 4 x E-2000/APC SM
E-2000 RHB/24 - industrial connector 24 x E-2000 SM/APC SM
F-3000 CRB/2 - industrial connector 2 x F-3000 SM/APC SM
X-BEAM - lens based connector

Industry

2



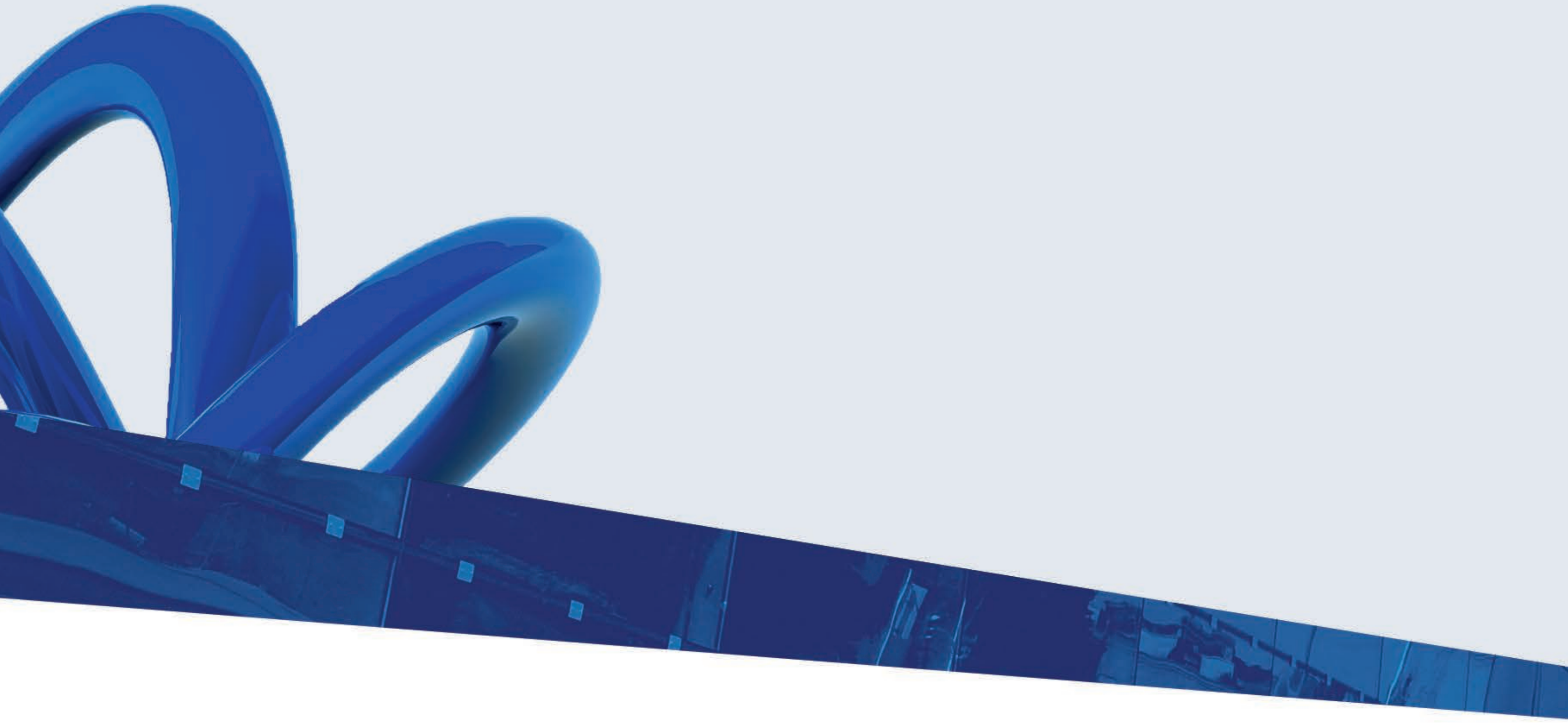
In optical communication a single service is usually delivered via two optical fibres, therefore hardly utilizing great potential of fibre medium. This way, service development or connection of new clients may lead to situation where the existing count of fibres is not sufficient.

This problem can be solved by using time division multiplexing, wavelength division multiplexing (WDM, CWDM, DWDM) or by bidirectional transmission of a wavelength in a single optical fibre (circulators).

Another multiplexing method is sharing a fibre medium by multiple users, achieved with two optical power dividers (couplers and splitters).

Utilizing passive optical filters is both a reliable and cheap way to exploit optical fibre in a more effective manner.

PASSIVE DEVICES



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EWDM EDGE MULTIPLEXER 30
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MULTIPLEXING

Wavelength division multiplexing is based on transmitting multiple wavelengths via single fibre. It may be achieved with use of optical passive components, such as: WDM, CWDM or DWDM multiplexers/demultiplexers. The main differences between the mentioned systems are the number of optical channels and channel spacing.

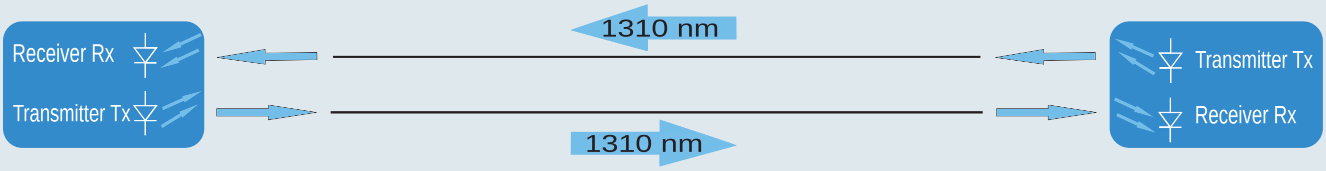
In the simplest variant (WDM) only two wavelengths are transmitted through a single fibre. The most commonly used wvlengths in telecommunication are 1310 nm and 1550 nm. The CWDM standard enables transmission of up to 18 channels with 20 nm channel spacing. Due to high channel spacing these methods are considered to be the cheapest ways of increasing the fibre optic network transmission capacity. In case of DWDM system the channel spacing is very narrow i.e. 1.6 nm, 0.8 nm or even 0.4 nm and requires the application of expensive optical active components.

Another way of multiplying the transmission capacity of fibre optic network is the application of optical circulators. These devices enable transmission in a single fibre of two signals with the same wavelength in opposite directions. Application of two circulators on both ends of single fibre optical track doubles the number of optical channels. Hence, the service that used to be delivered via two fibres, can now be provided with only one.

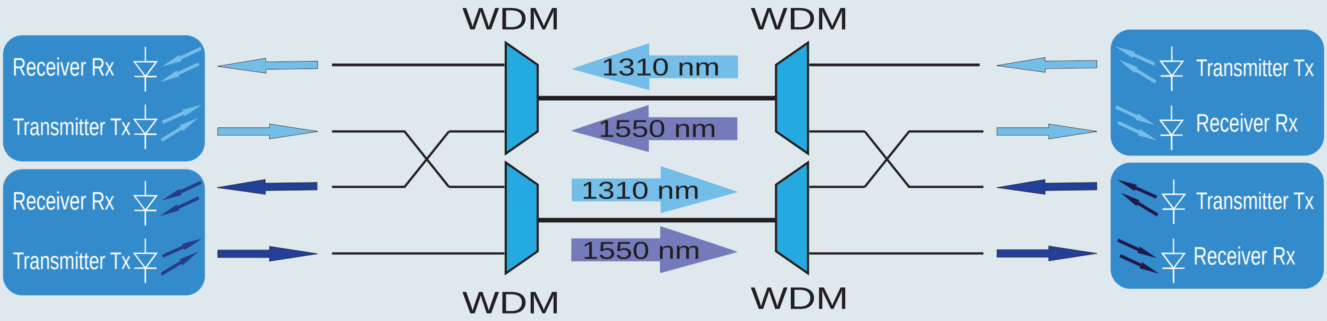
Application of passive optical devices is a very quick and cheap way of network development. Choosing passive components special attention should be paid to select devices with high channel isolation. Low channel isolation, depending on the performance of active equipment, may lead to transmission malfunction - the signal from the device transmitter is received by the detector of the same device. In case of digital signal transmission OPTOMER recommends application of multiplexers with channel isolation not less than 45 dB.

In order to simplify handling of passive components and their installation in existing optical distribution frames, OPTOMER offers passive optical components enclosed in LGX compatible modules terminated with adapters mounted on the module front plate, pigtailed MS modules as well as passive components installed in splice trays.

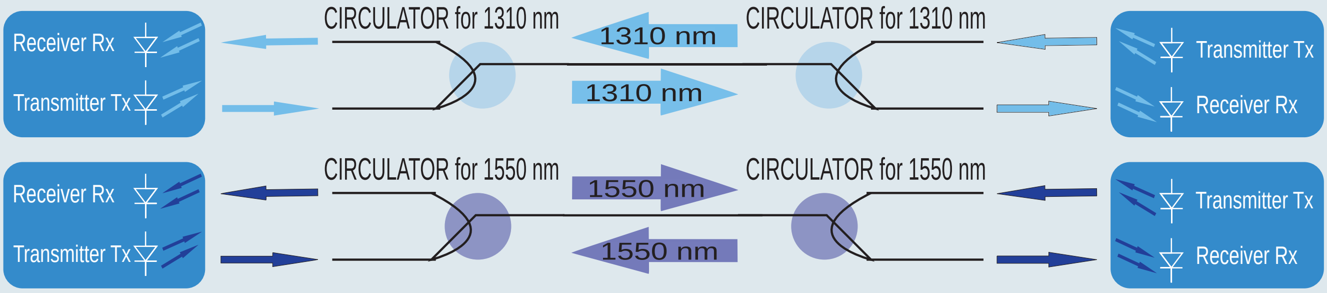
BASIC METHODS OF PASSIVE MULTIPLEXING OF OPTICAL NETWORKS



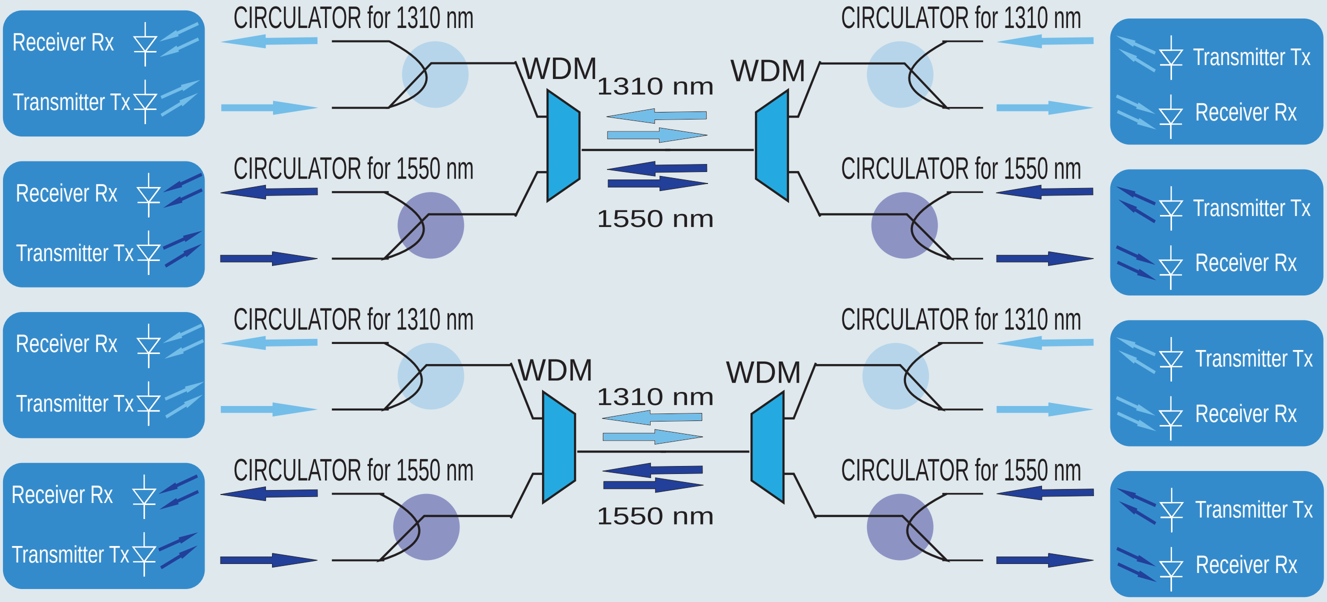
A connection using two fibres, without any multiplexing devices.



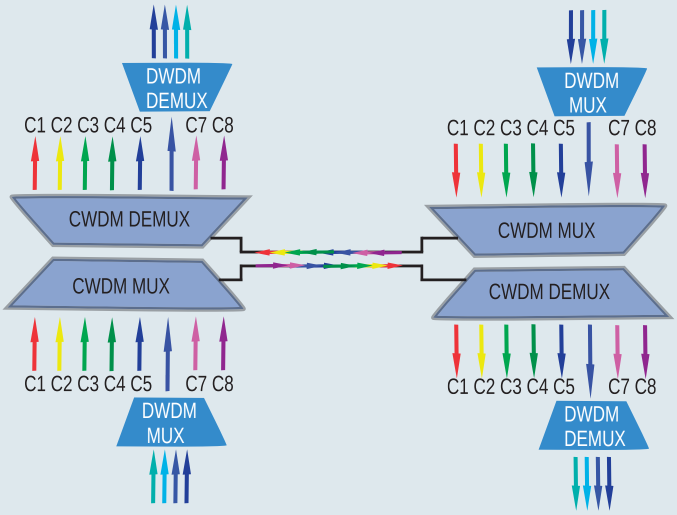
A two fibre link with WDM multiplexers.
After a passive device is applied, two fibres enable juxtaposition of two optical links.


Receiver Rx
Transmitter Tx
CIRCULATOR for 1310 nm
1310 nm
1310 nm
CIRCULATOR for 1310 nm
Transmitter Tx
Receiver Rx
Receiver Rx
Transmitter Tx
CIRCULATOR for 1550 nm
1550 nm
1550 nm
CIRCULATOR for 1550 nm
Transmitter Tx
Receiver Rx

A two fibre link with optical circulators.
After a passive device is applied, two fibres enable juxtaposition of two optical links.


Receiver Rx
Transmitter Tx
CIRCULATOR for 1310 nm
WDM
1310 nm
WDM
CIRCULATOR for 1310 nm
Transmitter Tx
Receiver Rx
Receiver Rx
Transmitter Tx
CIRCULATOR for 1550 nm
1550 nm
CIRCULATOR for 1550 nm
Transmitter Tx
Receiver Rx
Receiver Rx
Transmitter Tx
CIRCULATOR for 1310 nm
WDM
1310 nm
WDM
CIRCULATOR for 1310 nm
Transmitter Tx
Receiver Rx
Receiver Rx
Transmitter Tx
CIRCULATOR for 1550 nm
1550 nm
CIRCULATOR for 1550 nm
Transmitter Tx
Receiver Rx

A two fibre link with a combination of optical circulators and WDM multiplexers.
After a passive devices are applied, two fibres enable juxtaposition of four optical links.


DWDM DEMUX
C1 C2 C3 C4 C5 C7 C8
CWDM DEMUX
CWDM MUX
C1 C2 C3 C4 C5 C7 C8
DWDM MUX
DWDM MUX
C1 C2 C3 C4 C5 C7 C8
CWDM MUX
CWDM DEMUX
C1 C2 C3 C4 C5 C7 C8
DWDM DEMUX

A two fibre link with CWDM and DWDM multiplexers.

CR-3 OPTICAL CIRCULATOR

OPTOCODE C1010

*CR-3 optical circulator
with fibres protected with 900 µm tube*

FEATURES:

- enables bidirectional transmission of one wavelength in a single optical fibre
- doubles the wavelength capacity in a single optical fibre
- supports either 1310 nm or 1550 nm wavelength
- enables increase of informational capacity of network, without installing new optical cables
- available in MPPO-1 closure, fulfilling LGX standard
- insensitive to signal’s polarization

TECHNICAL SPECIFICATIONS:

	CR-3 optical circulator
number of ports	3
operational wavelength [nm]	1310 or 1550
insertion loss [dB]	0.8
channel isolation [dB]	≥50
PDL [dB]	0.1
PMD [ps]	0.05
reflection loss [dB]	50
maximum optical signal power [mW]	500
operating temperature [°C]	0~+70
fibre	by default protected with 900 µm tube or mounted in MPPO-1 closure
closure dimensions	depending on chosen fibre

NOTE: Above parameters refer to elements that are not ended with connectors

ORDERING:

MPPO-1-2XCR-3/1310/900/E2A/6AE2 - two optical circulators for wavelength of 1310 nm, ended with E-2000/APC connectors, in fulfilling LGX standard MPPO-1 closure, with 6 E-2000/APC adapters

TELEKOM MAN

OPTOMER
Tx, Port 1
Rx, Port 3
Cyrkulator optyczny
Linia, Port 2

Two CR-3 optical circulators in MPPO-1 closure

OPTOCODE C1020

CR-4 & CR-8 OPTICAL CIRCULATORS

FEATURES:

- increases the number of transmitted wavelengths in a single fibre four times
- supports both 1310 nm and 1550 nm wavelengths simultaneously
- enables increase of informational capacity of network, without installing new optical cables
- CR-4 module enables transmission of four waves in a single fibre
- CR-8 module enables transmission of eight waves in two fibres
- mounted in MPPO-1 closure, fulfilling LGX standard
- insensitive to signal’s polarization

TECHNICAL SPECIFICATIONS:

CR-4 & CR-8 optical circulators		
	CR-4	CR-8
number of ports	5	10
operational wavelength [nm]	1310 & 1550	
insertion loss [dB]	1.6	
channel isolation [dB]	45	
PDL [dB]	0.25	
return loss [dB]	50	
maximum optical signal's power [mW]	500	
operating temperature [°C]	0~+70	
fibre	mounted in MPPO-1	
closure dimensions	depending on chosen fibre	

NOTE: Above parameters refer to elements that are not ended with connectors

MODUŁ CYRKULATORÓW OPTYCZNYCH
Linia

Four channel module dedicated for two optical fibres

ORDERING:

MPPO-1-8/2XCR-1310/1550/K/E2A - four channel module, dedicated for two fibres, ended with E-2000/APC connectors, in fulfilling LGX standards MPPO-1 closure, with 10 E-2000/APC adapters

TELEKOM MAN

WDM MULTIPLEXER

OPTOCODE C1030

FEATURES:

- multiplexes or demultiplexes waves of two different lengths
- enables transmission of two different wavelengths via single optical fibre
- enables increase of informational capacity of network, without installing new optical cables
- available with channel isolation above 17 dB or 45 dB
- the device is offered in MPPO-1 closure, fulfilling LGX standard

TECHNICAL SPECIFICATIONS:

1310/1550 nm WDM multiplexer		
spectral operation range [nm]	1295~1325 and 1535~1565	
manufacturing technology	FBT	TFF
insertion loss [dB]	0.3	0.8
isolation [dB]	≥17	≥45
directivity [dB]	≥50	
PDL [dB]	≤0.1	
operating temperature [°C]	-40 ~ +85	
fibre	250 µm fibre or 900 µm, 2 mm, 3 mm tubes	
closure dimensions	depending on chosen fibre	

NOTE: Above parameters refer to elements that are not ended with connectors

1310/1550 nm WDM multiplexer with 900 µm fibre

ORDERING:

MPPO-1-2XWDM1X2/1310/1550/900/45/E2A - two WDM 1310/1550 nm multiplexers in fulfilling LGX standard MPPO-1 closure, with six E2000/APC adapters and isolation above 45 dB

WDM1x2/1310/1550/900/45 - one 1310/1550 nm WDM multiplexer with one meter of 900 µm fibre endings and isolation above 45 dB

ACCESS LAN xWDM

Two WDM multiplexers in MPPO-1 closure

OPTOCODE C1040

FWDM MULTIPLEXER

FEATURES:

- multiplexes and demultiplexes waves of different lengths
- enables adding or dropping 1550 nm wave, into upstream and downstream bands in optical network
- used in managing broadcast TV signal in passive optical networks
- offered in MPPO-1 closure, fulfilling LGX standard

TECHNICAL SPECIFICATIONS:

FWDM multiplexer		
pass band [nm]		1550~1560
reflected band [nm]		1260~1360 and 1480~1500
insertion loss [dB]	common - pass	≤1.0
	common - reflected	≤1.0
isolation [dB]	common - pass λ	≥40
	common - reflected λ	≥30
reflection loss [dB]		≥50
directivity [dB]		≥50
PDL [dB]		≤0.2
operating temperature [°C]		-40~+85
fibre		250 µm fibre or 900 µm, 2 mm, 3 mm tubes
closure dimensions		depending on chosen fibre

NOTE: Above parameters refer to elements that are not ended with connectors

FWDM multiplexer with 900 µm fibre

ORDERING:

MPPO-1-2XFWDM1X2/1310/1490/1550/900/SCA - two FWDM multiplexers in fulfilling LGX standard MPPO-1 closure, with six SC/APC adapters

WDM1x2/1310/1490/1550/900 - FWDM multiplexer with one meter of 900 µm fibre endings

FTTx PON

Two FWDM multiplexers in MPPO-1 closure

EWDM EDGE MULTIPLEXER

OPTOCODE C1050

EWDM multiplexer with 900 µm fibre

Two EWDM multiplexers in MPPO-1 closure

FEATURES:

- used to add 8 CWDM channels to existing transmission systems utilising 1310 nm wavelength
- used in developing existing 1310 nm networks by additional 8 CWDM channels
- offered in MPPO-1 closure fulfilling LGX standard

TECHNICAL SPECIFICATIONS:

EWDM edge multiplexer		
spectral operating range [nm]		1260 – 1360
		1460 – 1620
type 1 [nm]	pass band λ1	1260 – 1360
	reflected band λ2	1460 – 1620
type 2 [nm]	pass band λ1	1460 – 1620
	reflected band λ2	1260 – 1360
insertion loss [dB]	pass band λ1	<1.0
	reflected band λ2	<1.0
channel isolation [dB]	pass band λ1	>20
	reflected band λ2	>40
channel uniformity [dB]	pass band λ1	0.5
	reflected band λ2	0.5
PDL [dB]		<0.2
directivity [dB]		<50
reflection loss [dB]		>45
maximum optical power [mW]		<300
operating temperature [°C]		0 ~ +70

NOTE: Above parameters refer to elements that are not ended with connectors

ORDERING:

MPPO-1-2XEWDM1X2/1260 –1360/1460 –1620/900/SCA - two EWDM multiplexers in fulfilling LGX standard MPPO-1 closure, with six SC/APC adapters

EWDM1x2/1260 –1360/1460 –1620/900 - EWDM multiplexer with one meter of 900 µm fibre endings

ACCESS MAN xWDM

OPTOCODE
C1060

CWDM MULTIPLEXER & DEMULTIPLEXER

FEATURES:

- enables transmission of up to 16 waves of different length in a single fibre
- 20 nm distance between channels
- used for capacity increase of existing fibres, without need to introduce new fibres
- available in multiplexer, demultiplexer and add/drop multiplexer configurations
- offered in MPPO-1 closure, fulfilling LGX standard

TECHNICAL SPECIFICATIONS:

CWDM multiplexer & demultiplexer			
number of channels		2, 4, 8 or 16	(2, 4, or 8) + wideband channel 1310 nm
spectral operating range [nm]		1260~1620	
channels' central wavelengths		1271, 1291…1471, 1491…1571, 1591, 1611	1471, 1491, 1511, 1531, 1551, 1571, 1591, 1611
spectral width of 1310 nm channel [nm]		-	1260~1360
distance between channels [nm]		20	
CWDM channels' band [nm]		λ±6,5	
insertion loss (line - 1310 channel) [dB]		-	≤0.8
insertion loss (line - CWDM channel) [dB]	2-channel	≤1.0	≤1.3
	4-channel	≤1.5	≤1.8
	8-channel	≤3.0	≤3.3
	16-channel	≤4.5	-
channel uniformity [dB]		0,5	
isolation (demultiplexer) [dB]	adjacent channels	≥30	
	non-adjacent channels	≥40	
reflection loss [dB]		≥50	
directivity [dB]		≥50	
PMD [ps]		≤0.2	
PDL [dB]		≤0.2	
operating temperature [°C]		0 ~ +70	

NOTE: Above parameters refer to elements that are not ended with connectors

ORDERING:

MPPO-1-1XCWDM-4CH-M-SCA - four channel CWDM multiplexer, in fulfilling LGX standard MPPO-1 closure, with five SC/APC adapters, channels according to client's demand

ACCESS MAN xWDM

CWDM multiplexer with 900 µm fibre

OPTOMER
DMUX CWDM

CWDM demultiplexer in MPPO-1 closure

DWDM MULTIPLEXER & DEMULTIPLEXER

OPTOCODE C1070

FEATURES:

- enables transmitting up to 16 waves of different lengths in a single fibre
- distance between channels of 100 GHz or 200 GHz
- used for capacity increase in existing fibre links, without need to install new fibres
- offered in MPPO-1 closure, fulfilling LGX standard
- high temperature stability
- low insertion loss
- high channel isolation

DWDM MUX/DEMUX
DWDM
IN
Port 1
Port 2
Port 3
Port 4

DWDM multiplexer with 900 µm fibre

TECHNICAL SPECIFICATIONS:

DWDM multiplexer & demultiplexer						
number of channels	4	8	16	4	8	16
filter type	100 GHz			200 GHz		
channel band [nm]	λ±0.11			λ±0.25		
max. insertion loss [dB]	2.5	3.5	4.8	2.2	3.3	4.6
channel uniformity [dB]	≤1.5					
adjacent channel isolation (demultiplexer) [dB]	≥25			≥30		
non-adjacent channel isolation (demultiplexer) [dB]	≥35			≥40		
PDL [dB]	0.1					
PMD [ps]	0.1					
directivity [dB]	55					
insertion loss [dB]	≥45					
central wavelength stability [nm/°C]	0.002					
thermal stability [dB/°C]	0.006					
max. optical signal power [mW]	300					
operating temperature [°C]	-5 ~ +70					

NOTE: Above parameters refer to elements that are not ended with connectors

ORDERING:

PS-19/12-1XDWDM-4CH100-M/D-SCA – four channel DWDM multiplexer & demultiplexer, in PS-19/12 frame, with SC/APC adapters, channels according to client’s demand

MAN xWDM

DWDM multiplexer & demultiplexer in 19” frame

OPTOCODE C1080

FBT COUPLER

FEATURES:

- used for division of signal's optical power
- as a monolithic device, available with 1x2, 2x2, 1x3 and 1x4 configurations
- available symmetric or asymmetric power division
- standard spectral operation range is 1310±40 nm and 1550±40 nm
- offered in MPPO-1 closure, fulfilling LGX standard

FBT coupler with 250 µm fibre

TECHNICAL SPECIFICATIONS:

Symetric FBT coupler				
configuration	1x2	2x2	1x3	1x4
ratio	uniform power distribution among all output ports			
spectral operating range [nm]	1310±40 1490±10 1550±40		1310±40 1550±40	
insertion loss typ/max. [dB]	3.4/3.7		5.8/6.2	6.6/7.4
reflection loss [dB]	55			
directivity [dB]	55			
PDL [dB]	0.2	0.2	0.25	0.25
operating temperature [ºC]	-40 ~ +85			
fibre	250 µm fibre or 900 µm, 2 mm, 3 mm tubes			
closure dimensions	depending on chosen fibre			

NOTE: Above parameters refer to elements that are not ended with connectors

FBT coupler with 2 mm cable

asymmetric 1x2 FBT coupler		
ratio	max. insertion loss [dB]	PDL [dB]
1/99	23.0/0.25	0.20/0.05
2/98	19.0/0.30	0.20/0.05
5/95	15.0/0.45	0.20/0.10
10/90	11.3/0.65	0.15/0.10
20/80	7.85/1.25	0.15/0.15
30/70	6.00/2.00	0.15/0.15
40/60	4.70/2.70	0.15/0.15

NOTE: Above parameters refer to elements that are not ended with connectors

ORDERING:

MPPO-1-2-1X2-SCA - two 1x2 FBT couplers in fulfilling LGX standard MPPO-1 closure, with 6 SC/APC adapters

SPL1X2/1316/900/SCA - symetric 1x2 FBT coupler, with one meter length 900 µm tube and SC/APC connectors

ACCESS CATV FTTx PON

Two 1x2 FBT couplers in MPPO-1 closure

PLC SPLITTER

OPTOCODE C1090

SQS
PLC 1x32
S/N SC08J-032-3594

1x32 PLC splitter with fibre ribbon

FEATURES:

- used for division of signal's optical power
- as monolithic device, available with 1x2 up to 1x128 divisions
- available with symetric power division
- spectral operating range is 1260 nm to 1650 nm
- offered in MPPO-1 closure, fulfilling LGX standard

TECHNICAL SPECIFICATIONS:

	PLC splitter											
	1x2	2x2	1x4	2x4	1x8	2x8	1x16	2x16	1x32	2x32	1x64	1x128
spectral operating range [nm]	1260 ~ 1650											
max. insertion loss [dB]	3.9	4.4	7.4	7.8	10.8	11	13.8	14.5	16.9	17.5	21.0	25.3
typ. insertion loss [dB]	3.5	4.0	6.9	7.5	9.8	9.8	13.5	13.8	16.5	17.0	20.0	23.5
max. uniformity [dB]	0.5	1.2	0.6	1.3	1.0	1.5	1.3	2.0	1.6	2.0	2.0	2.8
reflection loss [dB]	≥55											
directivity [dB]	≥55											
max. PDL [dB]	0.2	0.2	0.2	0.2	0.3	0.4	0.3	0.4	0.3	0.4	0.4	0.4
max. PDL [dB] [ºC]	-40 ~ +85											
fibre	250 μm fibre, ribbon or 900 μm, 2 mm tubes											
closure dimensions	depending on chosen fibre and configuration											

NOTE: Above parameters refer to elements that are not ended with connectors

1x16 PLC Splitter Module
S/N : 2124-A00320053698

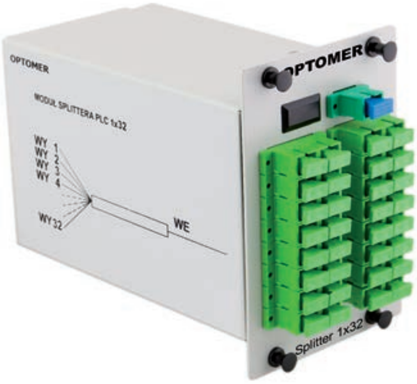
1x16 PLC splitter with 2 mm cables

ORDERING:

MPPO-2-1X16-SCA - 1x16 PLC splitter in fulfilling LGX standard MPPO-2 closure, with SC/APC adapters

SPL1X64/1316/2.0/64SCA - 1x64 symetric PLC splitter, with one meter 2 mm cables and SC/APC connectors

ACCESS FTTx PON


OPTOMER
MODUŁ SPLITERA PLC 1x32
WY 1
WY 2
WY 3
WY 4
WY 32
WE
OPTOMER
Splitter 1x32

1x32 PLC splitter in MPPO-3 closure

OPTOCODE C1100

IZL OPTICAL ISOLATOR

FEATURES:

- used for reduction of reflection and backscattering
- available in one and two stages version
- signal's polarization insensitive
- low insertion loss
- high return loss
- high thermal stability
- ability to mount in splice trays and MPPO or MS closures

TECHNICAL SPECIFICATIONS:

IZL isolator		
isolation stage	single stage	dual stage
central wavelength [nm]	1310 or 1550	
operating band [nm]	±20	
min. isolation at 23°C [dB]	28	45
typ. insertion loss at 23°C [dB]	0.4	0.5
max. insertion loss at -7 °C to -5 °C [dB]	0.6	0.8
minimum reflection loss [dB]	55/55	55/55
PDL [dB]	0.05	0.1
max. optical power [mW]	300	
operating temperature [°C]	-5~+70	

NOTE: Above parameters refer to elements that are not ended with connectors

Optical isolator with 900 um tubes

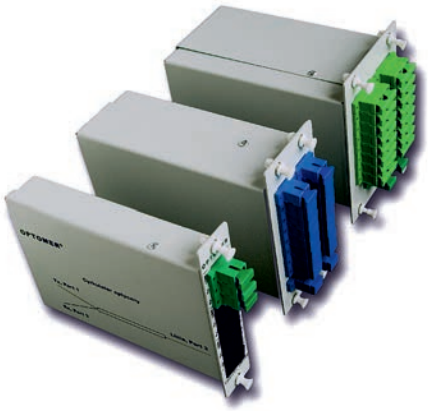
ORDERING:

IZL1-13-300-90-SCA - single stage optical isolator, operating at 1310 nm wavelength, with one meter long 900 um tube ended with SC/APC connectors

CATV

MPPO CLOSURE

OPTOCODE C1110



Fulfilling LGX standard MPPO modules

FEATURES:

- fulfills LGX standard
- mechanical protection for passive optical devices
- optical devices’ endings available at front edge as adapters of any standard
- MPPO closures are installed in 19” racks, cabinets and PPO-19 frames of 1U, 2U or 3U hight

TECHNICAL SPECIFICATIONS:

	MPPO closure			
	MPPO-1	MPPO-2	MPPO-3	MPPO-4
maximum fibre count	10	18	34	66
dimensions width/height/depth [mm]	30/130/158	60/130/158	90/130/158	180/130/158
exemples of capacity for E-2000/SC endings				
CR-3 circulator	2 pcs	-	-	-
CR-4 circulator	1 pc.	-	-	-
CR-8 circulator	2 pcs	-	-	-
WDM multiplexer	3 pcs	6 pcs	11 pcs	22 pcs
CWDM/DWDM multiplexer/demultiplexer	1 pc. of 8 channel MUX/DMUX	1 pc. of 8/16 channel MUX/DMUX	2 pcs of 16 channel MUX/DMUX	-
FBT coupler	3 pcs	6 pcs	11 pcs	11 pcs
PLC splitters	2 pcs 1x4 1 pc. 1x8	1 pc. 1x16	1 pc. 1x32	1 pc. 1x64

ORDERING:

MPPO-1 - fulfilling LGX standard module for mounting passive optical components

PPO-19 FRAME

OPTOCODE C1120

19” PPO-19/1U frame

19” PPO-19/2U frame

19” PPO-19/3U frame

FEATURES:

- dedicated for mounting MPPO modules, fulfilling LGX standard
- enables installation in typical 19” or 21/23” racks and cabinets, with AD-19 adapters

TECHNICAL SPECIFICATIONS:

	PPO-19		
	PPO-19/1U	PPO-19/2U	PPO-19/3U
capacity	3 pcs MPPO-1	3 pcs MPPO-2 6 pcs MPPO-1	2 pcs MPPO-4 4 pcs MPPO-3 7 pcs MPPO-2 14 pcs MPPO-1

ORDERING:

PPO-19/1U - 19” 1U frame, dedicated for mounting maximum 3 MPPO-1 modules

FTTx PON xWDM

OPTOCODE C1130

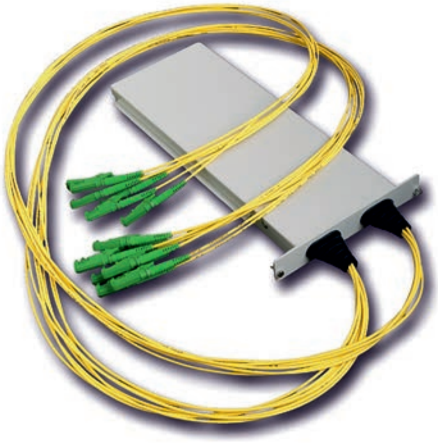
MS MODULE

FEATURES:

- mechanical protection for passive devices installed inside the module
- 2 mm cabling, ended with connectors of any type
- installed in PS-19/144 frame

TECHNICAL SPECIFICATIONS:

MS module			
dimensions: width/height/depth [mm]	35/100/250	30/100/250	20/100/250
max. MS modules' count in PS-19/144	12	14	21
max splitters' count/ratio mounted in a module	1 pc. 1x64	1 pc. 1x32	1 pc. 1x16 2 pcs 1x8 4 pcs 1x4 4 pcs 1x2


MS module

ORDERING:

MS-1x8/3U - optical spllitter module with 2 mm cables, with no connectors, dedicated for PS-19/144 frame

PS-19/144 frame with MS modules

OPTOCODE C1140

KS-3E, KSH TRAYS

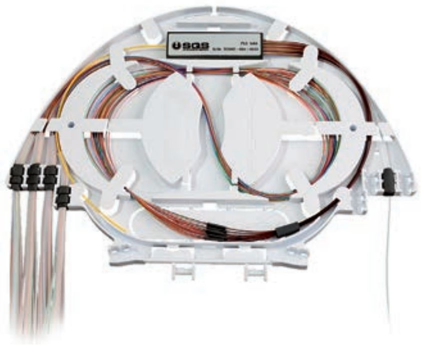
FEATURES:

- mechanical protection for passive devices mounted inside
- with 250 um fibres (splicing dedicated) or 900 um tubes, ended with any connectors
- dedicated for installation in distribution boxes or splice closures from OPTOMER catalogue

ORDERING:

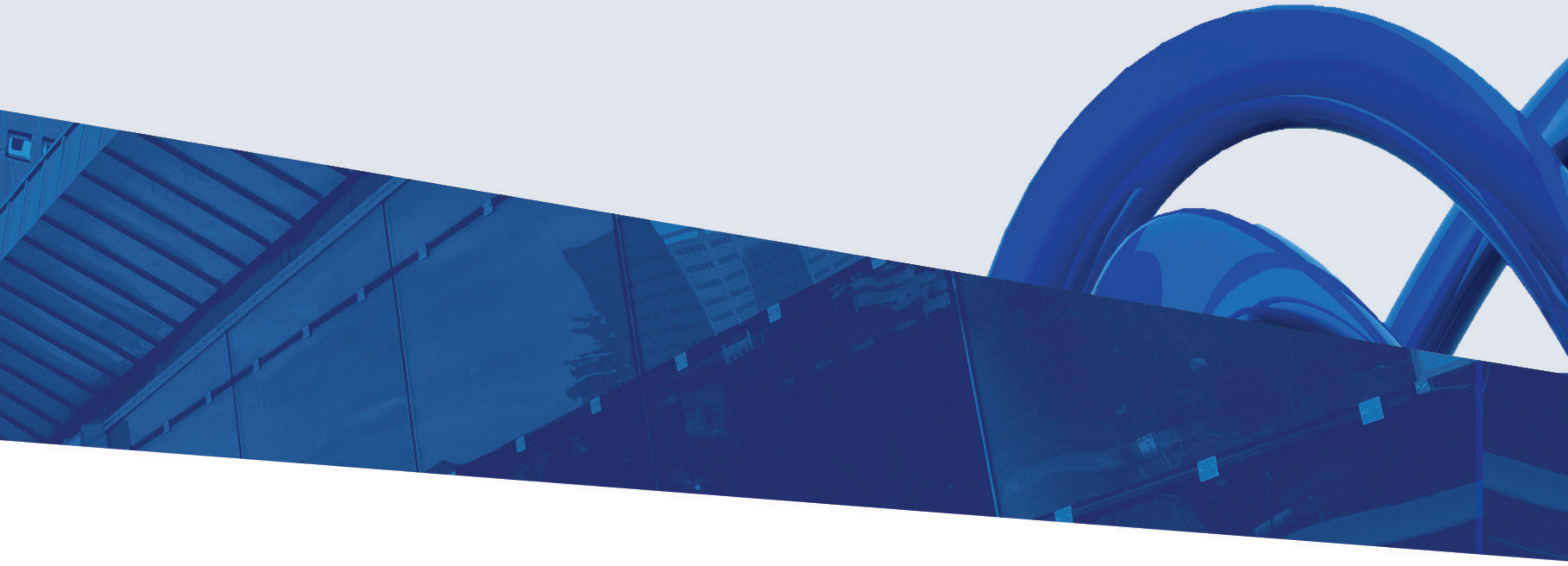
KS-S-SPL1x1x4/1316/1.5m/900/5E2A - optical splitter tray with 900 um tube of 1.5 m length, ended with E-2000/APC connectors

FTTx PON xWDM


KSH tray with PLC 1x64 splitter

KS-3E tray with PLC 1x64 splitter

3

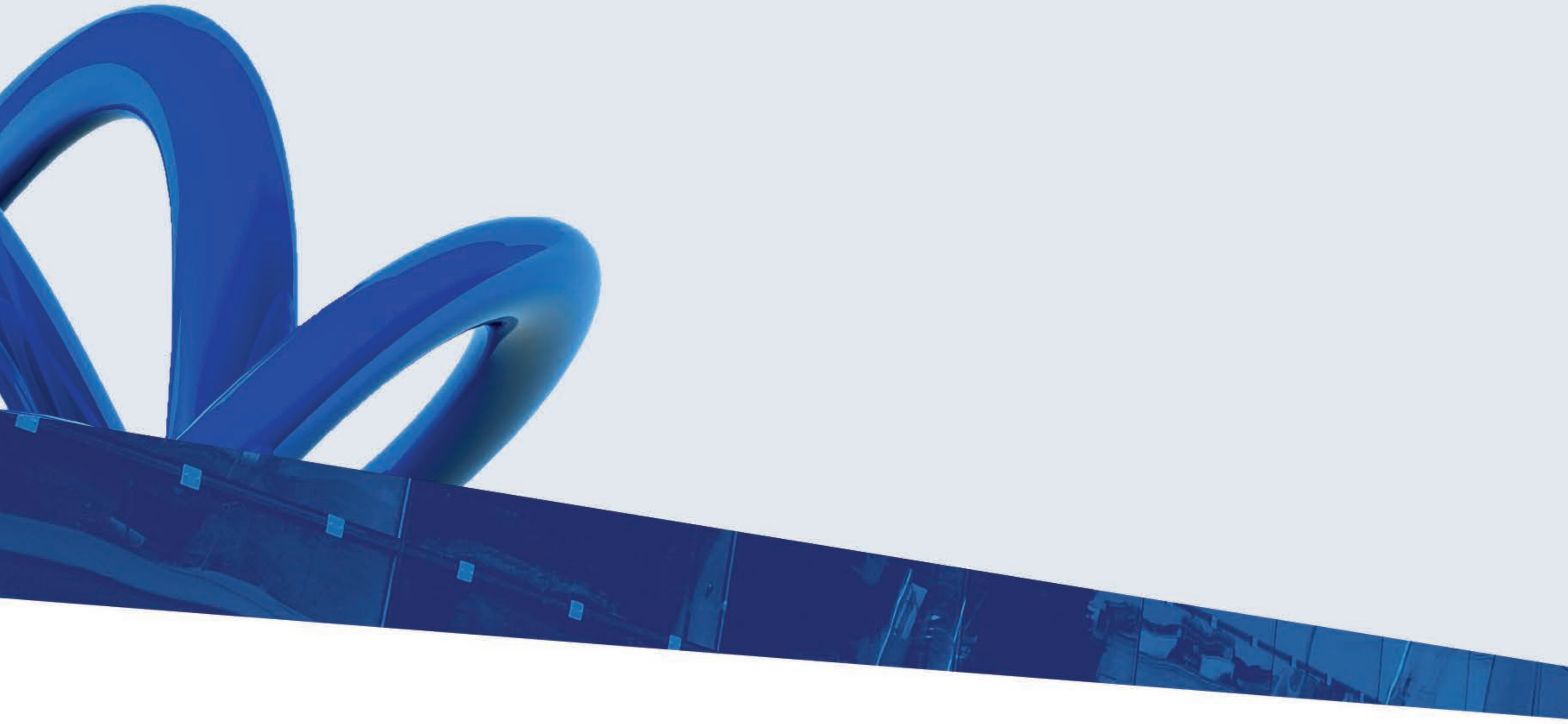


The Optical Distribution Equipment covers the products used for building the optical network nodes. Central office cabinets, optical distribution frames, splice boxes, excess cable trays etc, are the integral parts of any fibre optic network.

This chapter covers a wide range of the latest OPTOMER optical distribution equipment solutions including the STP and PSU families of high capacity optical distribution frames with a broad selection of modules and auxiliary accessories. This part of the catalogue presents also a range of wall mounted fibre optic distribution boxes dedicated for the networks involving low fibre count cables, fibre optic closures, the latest cable ducting system, cable bundles and multipatchcords. Depending on the area of application one can select the products dedicated for indoor applications, as well as the environmentally protected street cabinets and optical distribution boxes.

The optical distribution equipment included in this catalogue is compliant with the following standards: EN ETS 300 119, BS EN 60825-2:2005, ITU-L.50, ZN-06 TP SA-009. All the solutions were designed taking into account the customer performance and quality feedback, with full attention to the safety of optical fiber. OPTOMER products provide easy installation and reliable subsequent operation.

OPTICAL DISTRIBUTION EQUIPMENT



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PS-3 FIBRE OPTIC DISTRIBUTION BOX

OPTOCODE E1000

FEATURES:

- wall mounted in controlled environments
- termination of up to 72 fibres, 6 cable entries
- storage space for patchcord cable under adapter plate
- full front access to splice trays and adapter plate
- hinged splice trays allowing convenient maintenance

EQUIPPED WITH:

- splice trays KS-3E, cable organisers
- cable ties, cable rubber glands
- installation and handling instructions
- installation kit

TECHNICAL SPECIFICATIONS:

	PS-3/24	PS-3/48	PS-3/72
number of splice trays	1 x KS-24	2 x KS-24	3 x KS-24
maximum number of splices	72		
adapter capacity	24	48	72
connector standard	E-2000, SC, FC, ST, LC		
recommended pigtail length [m], 0.9 mm buffered fibre	2.5		
recommended pigtail length [m], 2 mm cable diameter	1.5		
number of outdoor cable entries	6		
maximum diameter of input cable [mm]	14		
dimensions: width/height/depth [mm]	360/400/150		
weight [kg]	6		
housing material/colour	steel sheet/RAL 7035		
mechanical protection IK	IK08		
environmental protection IP	IP51		

Fibre Optic Distribution Box PS-3/72

ORDERING:

PS-3/72/K/72E2A - wall mounted Fibre Optic Distribution Box equipped with 72 pigtails and 72 E2000/APC adapters

TELECOM ACCESS CATV MAN WAN LAN FTTx PON xWDM Industry

OPTOCODE E1010

PS-5 FIBRE OPTIC DISTRIBUTION BOX

FEATURES:

- wall mounted in controlled environments
- termniation of up to 24 fibres, 4 cable entries
- uncut fibre loops storage
- full front access to splice trays and adapter plate

EQUIPPED WITH:

- separate adapter plate protection lid (option)
- splice tray KS-3E, cable organisers
- cable ties, cable rubber glands
- installation and handling instructions
- installation kit

TECHNICAL SPECIFICATIONS:

	PS-5/12	PS-5/24
number of splice trays	1 x KS-24	
maximum number of splices	24	
adapter capacity	12	24
connector standard	E-2000, SC, FC, ST, LC	
recommended pigtail length [m], 0.9 mm buffered fibre	2	
recommended pigtail length [m], 2 mm cable diameter	1.5	
number of outdoor cable entries	4	
maximum diameter of input cable [mm]	14	
dimensions: width/height/depth [mm]	250/400/100	
weight [kg]	3	
housing material/colour	steel sheet/RAL 7035	
mechanical protection IK	IK08	
environmental protection IP	IP51	

ORDERING:

PS-5/24/P/K/24E2A wall mounted Fibre Optic Distribution Box equipped with 24 pigtails and 24 E2000/APC adapters, with adapter plate lid

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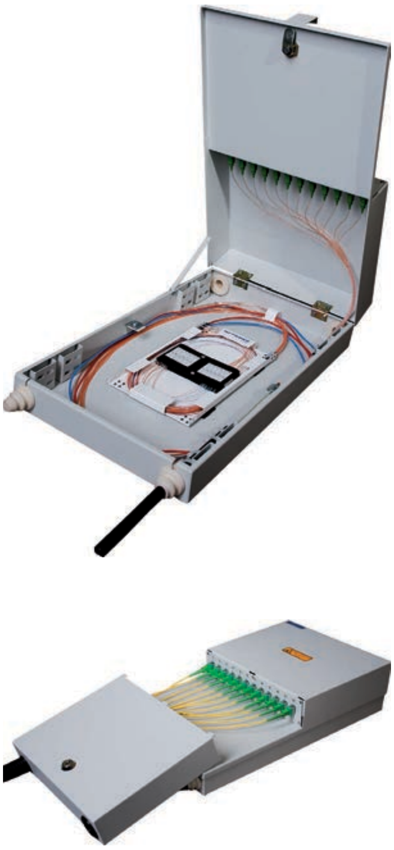
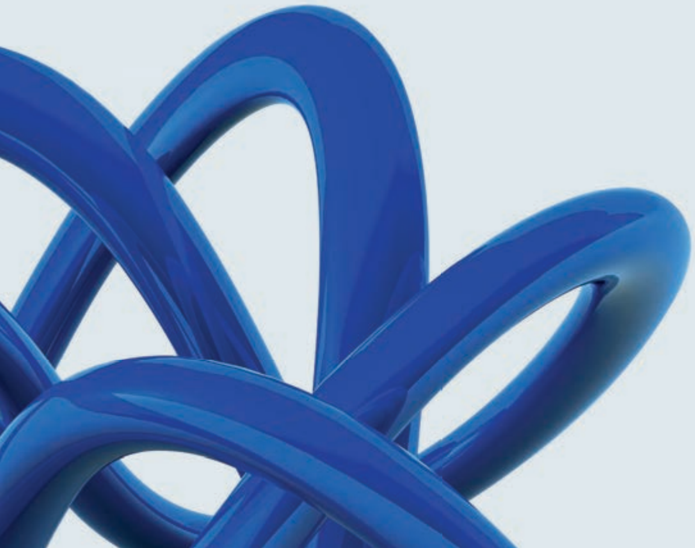
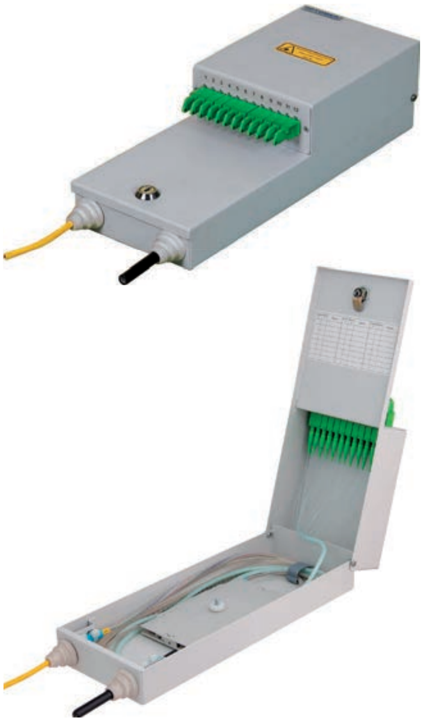


Fibre Optic Distribution Box PS-5/24



PS-8 FIBRE OPTIC DISTRIBUTION BOX

OPTOCODE E1020



Fibre Optic Distribution Box PS-8/12

FEATURES:

- wall mounted in controlled environments
- termniation of up to 12 fibres, 2 cable entries
- uncut fibre loops storage
- full front access to splice trays and adapter plate
- 12 splice KSQ splice tray

EQUIPPED WITH:

- splice tray KSQ, cable organisers
- cable ties, cable rubber glands
- installation and handling instructions
- installation kit

TECHNICAL SPECIFICATIONS:

	PS-8/12
number of splice trays	1 x KSQ
maximum number of splices	12
adapter capacity	12
connector standard	E-2000, SC, FC, ST, LC
recommended pigtail length [m], 0.9 mm buffered fibre	1.5
recommended pigtail length [m], 2 mm cable diameter	1.5
number of outdoor cable entries	2
maximum diameter of input cable [mm]	14
dimensions: width/height/depth [mm]	135/340/90
weight [kg]	1.5
housing material/colour	steel sheet/RAL 7035
mechanical protection IK	IK08
environmental protection IP	IP51

ORDERING:

PS-8/12/K/12E2A - wall mounted Fibre Optic Distribution Box equipped with 12 pigtails and 12 E2000/APC adapters

TELECOM ACCESS CATV MAN WAN LAN FTTx PON xWDM Industry

OPTOCODE E1040

PSW-12/DIN FIBRE OPTIC DISTRIBUTION BOX

FEATURES:

- wall or 35 mm DIN rail mounted
- easy installation in telecom and power cabinets
- termniation of up to 12 fibres, 2 cable entries
- back or side mounting
- captive screw mounted lid

EQUIPPED WITH:

- KSQ splice tray
- cable ties, spiral protection sleeve
- cable strength member clamps
- installation and handling instructions
- installation kit (for DIN rail)

TECHNICAL SPECIFICATIONS:

	PSW-12/DIN
number of splice trays	1 x KSQ
maximum number of splices	12
adapter capacity	12
connector standard	E-2000, SC, FC, ST, LC
recommended pigtail length [m], 0.9 mm buffered fibre	1.5
recommended pigtail length [m], 2 mm cable diameter	-
number of outdoor cable entries	2
maximum diameter of input cable [mm]	10
dimensions: width/height/depth [mm]	220/120/40
weight [kg]	1.2
housing material/colour	steel sheet/RAL 7035
mechanical protection IK	IK08
environmental protection IP	IP20

ORDERING:

PSW-DIN-12/K/12E2A - wall mounted Fibre Optic Distribution Box equipped with 12 pigtails and 12 E2000/APC adapters

TELECOM ACCESS CATV MAN WAN LAN FTTx PON xWDM Industry

Fibre Optic Distributio Box PSW-12/DIN

OPTOCODE E1060

COMPACT FIBRE OPTIC DISTRIBUTION BOX PSM-4

FEATURES:

- wall or 35 mm DIN rail mounted
- easy installation in telecom and power cabinets
- termniation of up to 4 fibres, 2 cable entries
- organisation of fibre routing tubes vertical and horizontal
- splice box option for branch cables - additional splice protector holder required

EQUIPPED WITH:

- fibre organiser
- splice protector holder, cable ties
- DIN rail fitting (ordered separately)
- installation and handling instructions
- installation kit

TECHNICAL SPECIFICATIONS:

	PSM-4/SC/E-2000
number of splice trays	-*
maximum number of splices	4/max. 8
adapter capacity	4
connector standard	E-2000, SC
recommended pigtail length [m], 0.9 mm buffered fibre	0.5
recommended pigtail length [m], 2 mm cable diameter	-
number of outdoor cable entries	4
maximum diameter of input cable [mm]	10
dimensions: width/height/depth [mm]	90/145/20
weight [kg]	0.5
housing material/colour	steel sheet/RAL 7035
mechanical protection IK	IK08
environmental protection IP	IP20

* - splice protector holder

ORDERING:

PSM-DIN-4/K/4E2A - wall mounted Compact Fibre Optic Distribution Box, equipped with 4 pigtails and 4 E2000/APC adapters

CATV LAN FTTx PON Industry

Comppact Fibre Optic Distribution Box PSM-4/SC/E-2000

MSW-12/DIN FIBRE OPTIC SPLICE BOX

OPTOCODE E1050

Fibre Optic Splice Box MSW-12/DIN

FEATURES:

- wall or 35 mm DIN rail mounted in controlled environments
- 12 fibre splice capacity, 4 cable entries
- easy organisation of uncut fibre loops
- full front access to splice trays

EQUIPPED WITH:

- KSQ splice tray
- cable ties, cable rubber glands
- installation and handling instructions
- installation kit

TECHNICAL SPECIFICATIONS:

	MSW-12/DIN
number of splice trays	1 x KSQ
maximum number of splices	12
number of cable inputs/outputs	1/1
maximum cable diameter [mm]	10
dimensions: width/height/depth [mm] [mm]	220/123/40
housing material/colour	steel sheet/RAL 7035
mechanical protection IK	IK08
environmental protection IP	IP20

ORDERING:

MSW-DIN-12 - wall mouned Fibre Optic Splice Box for 12 splices

TELECOM ACCESS CATV MAN WAN LAN FTTx PON xWDM Industry

MK-5 SPLICE BOX

OPTOCODE E1090

FEATURES:

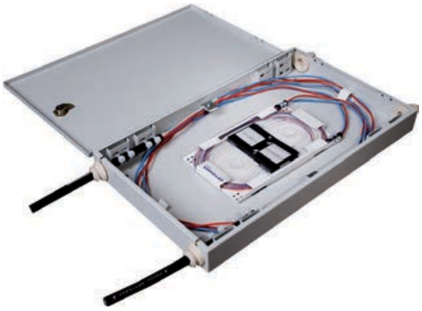
- wall mounted in controlled environments
- 72 fibre splice capacity, 4 cable entries
- easy organisation of uncut fibre loops
- full front access to splice trays

EQUIPPED WITH:

- KS-3E splice tray
- cable ties, cable rubber glands
- installation and handling instructions
- installation kit

TECHNICAL SPECIFICATIONS:

	MK-5/24	MK-5/48	MK-5/72
number of splice trays	1 x KS-3E	2 x KS-3E	3 x KS-3E
maximum number of splices	24	48	72
number of cable inputs/outputs	2/2		
maximum cable diameter [mm]	14		
dimensions: width/height/depth [mm]	250/400/50		
housing material/colour	steel sheet/RAL 7035		
mechanical protection IK	IK08		
environmental protection IP	IP51		



Splice Box MK-5

ORDERING:

MK-5/24 - wall mounted Splice Box for 24 splices

TELECOM ACCESS CATV LAN FTTx PON Industry

OPTOCODE E1100

MK-72, MK-144 SPLICE BOX

FEATURES:

- wall mounted in controlled environments
- easy high fibre count cables branching out to small fibre count cables
- entry cable outer diameter range: 10 mm to 18 mm
- branch cable outer diameter range: 8 mm to 12 mm
- full front access to splice trays

EQUIPPED WITH:

- KS-3E splice trays (full amount - option)
- cable glands DP 13, DP 16, DP 21
- cable ties, cable organisers
- installation and handling instructions
- installation kit

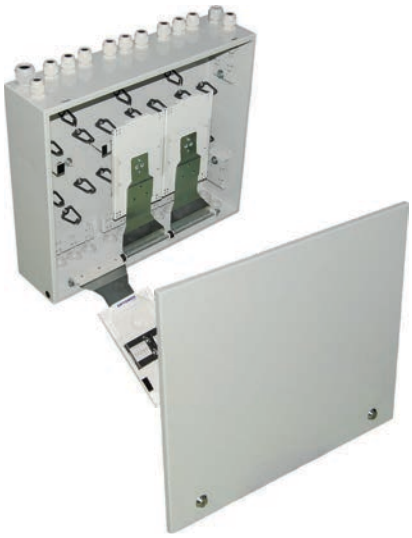
TECHNICAL SPECIFICATIONS:

	MK-72	MK-144
number of splice trays	3 x KS-3E (max. 9 x KS-3E)	6 x KS-3E (max. 18 x KS-3E)
maximum number of splices	72 (max. 216)	144 (max. 432)
number of cable inputs/outputs	2/24	4/40
maximum cable diameter [mm]	4 for 18 and 22 for 12	2 for 18 and 42 for 12
dimensions: width/height/depth [mm]	470/120/430	820/120/430
housing material/colour	steel sheet/RAL 7035	
mechanical protection IK	IK08	
environmental protection IP	IP51	

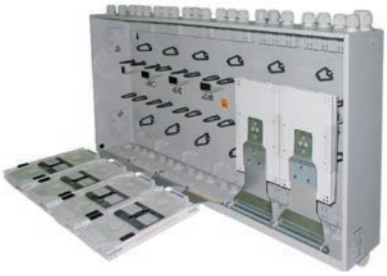
ORDERING:

MK-72 - Splice Box for 72 fibre splices

TELECOM ACCESS CATV LAN FTTx PON Industry



Splice Box MK-72



Splice Box MK-144

NMS-4, NMS-6 WALL MOUNTED SPLICE BOX

OPTOCODE E1080/E1085

Wall mounted splice box NMS-4

FEATURES:

- wall mounted for outdoor use
- rubber gland cable ports or cables routed directly in corrugated tube
- IP65 rated environmental protection (NMS-4) with application of cable glands DP, IP54 (NMS-6)
- full front access to splice trays

EQUIPPED WITH:

- fibre organiser, rubber glands
- splice protector holder, cable ties
- installation and handling instructions
- installation kit

TECHNICAL SPECIFICATIONS:

	NMS-4	NMS-6
number of splice trays	-*	
maximum number of splices	4	6
number of cable inputs/outputs	2/2	10/12
maximum cable diameter [mm]	10	11
dimensions: width/height/depth [mm]	130/35/80	120/70/170
housing material/colour	ABS	
mechanical protection IK	IK08	
environmental protection IP	IP65	IP54

* - splice protector holder

Wall mounted splice box NMS-6

ORDERING:

NMS-DIN-6 - 6 splice wall mounted splice box

CATV LAN FTTx PON Industry

OPTOCODE E1030

PSH-2 OUTDOOR FIBRE OPTIC DISTRIBUTION BOX

FEATURES:

- outdoor and/or indoor use
- for application in industrial environments with high dust level
- splitter installation
- separate splice and cross connect zones
- IP66 rated environmental protection
- possibility of instalation on a plinth

EQUIPPED WITH:

- adapter plate
- KS-3E splice trays
- cable glands DP-13, DP-16, DP-21
- cable ties and cable protective band
- installation and handling instructions
- installation kit

TECHNICAL SPECIFICATIONS:

	PSH-2/12	PSH-2/24	PSH-2/48	PSH-2/72	PSH-2/96	PSH-2/144
number of splice trays	2 x KS-3E		4 x KS-3E	6 x KS-3E	8 x KS-3E	12 x KS-3E
maximum number of splices	24	24	48	72	96	144
adapter capacity	12	24	48	72	96	144
connector standard	E-2000, SC, FC, ST					E-2000, SC, LC
recommended pigtail length [m], 0.9 mm buffered fibre	2.5		3		4	
recommended pigtail length [m], 2 mm cable diameter	2.5				3	4
number of outdoor cable entries	4		8			12
maximum diameter of input cable [mm]	18				21	26
dimensions: width/height/depth [mm]	300/400/200		400/500/200		500/600/230	800/600/300
weight [kg]	5.8		7.5	8	11	26
housing material/colour	glass fibre reinforced polyester/RAL 7035					
mechanical protection IK	IK10					
environmental protection IP	IP66					

ORDERING:

PSH-2/96/E/SC - Outdoor Fibre Optic Distribution Box for 96 pigtails and E2000 or SC adapters

CATV LAN FTTx PON Industry

Outdoor Fibre Optic Distribution Box PSH-2

PSH-3 OUTDOOR FIBRE OPTIC DISTRIBUTION BOX

OPTOCODE E1070

FEATURES:

- outdoor and/or indoor use
- for application in industrial environments and/or telecom manholes
- 12 fibre capacity from 2 cable entries
- separate splice and cross connect zones
- IP65 rated environmental protection
- full front access to the splice tray

EQUIPPED WITH:

- splice tray KSQ, cable gland DP 16 H
- rubber cable gland, cable ties
- set of wall fixing screws (option)
- installation and handling instructions
- installation kit

Outdoor Fibre Optic Distribution Box PSH-3

TECHNICAL SPECIFICATIONS:

	PSH-3/12
number of splice trays	1 x KSQ
maximum number of splices	12
adapter capacity	12
connector standard	E-2000, SC, FC, ST
recommended pigtail length [m], 0.9 mm buffered fibre	1.5
recommended pigtail length [m], 2 mm cable diameter	-
number of outdoor cable entries	2
maximum diameter of input cable [mm]	14
dimensions: width/height/depth [mm]	140/230/90
weight [kg]	0.7
housing material/colour	ABS or PC/RAL 7035
mechanical protection IK	IK07/IK08
environmental protection IP	IP65

ORDERING:

PSH-3/12/E/SC - Outdoor Fibre Optic Distribution Box for 12 pigtails and 12 adapters E2000 or SC

CATV LAN FTTx PON Industry

OPTOCODE E1110

19” PATCH PANEL PS-19

FEATURES:

- termination of up to 144 fibres
- installation in 19” racks with the minimum depth of 300 mm, e.g. STP-19
- installation in 21” and/or 23” racks with the use of AD-19 adapters
- patchord cables’ protection with the use of PO-1 and/or PO-2 patchcord management shelves
- bearing guided draw-out mechanism
- 70 mm distance between door surface and adapter plate
- application of additional cable gland allows direct outdoor cable (10 mm to 14 mm outer diameter) or multipatchcord entry (option)
- key lock on the panel front (option)
- possibility of doubling the capacity by the use of Duplex LC adapters

EQUIPPED WITH:

- adapter plate, splice trays KS-3E
- cable organisers and cable ties
- installation and handling instructions
- installation kit
- cable gland (optional)
- duplex adapter plate (optional)

TECHNICAL SPECIFICATIONS:

	PS-19/12 1U	PS-19/24 1U	PS-19/48 1U	PS-19/48 2U	PS-19/72 3U	PS-19/144 4U
number of splice trays	1 x KS-3E		2 x KS-3E		3 x KS-3E	6 x KS-3E
maximum number of splices	24		48		72	144
adapter capacity	12	24	48		72	144
connector standard	E-2000, SC, FC, ST, LC		duplex LC	E-2000, SC, FC, ST, LC		E-2000, SC
LC Duplex adapter capacity	24	48*	48	96*	144*	-
recommended pigtail length [m], 0.9 mm buffered fibre	2.5					
number of outdoor cable entries	1					
dimensions: width/height/depth [mm]	483/44/200			483/88/200	483/132/200	483/176/200
weight [kg]	2.5			2.9	3.3	4
number of modules	-	-	-	-	-	-
module type	-	-	-	-	-	-
mounting brackets position	front					
housing material/colour	steel sheet/RAL 7035					

* -the use of duplex adapters requires a corresponding increase in splice trays number

ORDERING:

PS-19/24/K/24E2A - 19” Patch Panel equipped with 24 pigtails and 24 adapters E2000/APC

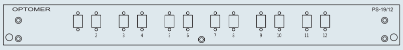
TELECOM ACCESS CATV MAN WAN LAN FTTx PON xWDM Industry

19” Patch Panel PS-19 with PO-2

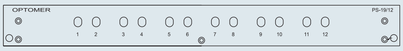
19” Patch Panel PS-19/3U

19” PATCH PANEL ADAPTER PLATE CUT-OUTS

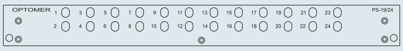
12 E2000/SC*


OPTOMER
PS-19/12

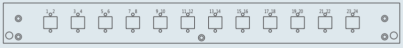
12 ST/FC


OPTOMER
PS-19/12

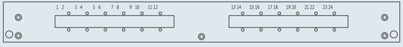
24 ST/FC


OPTOMER
PS-19/24

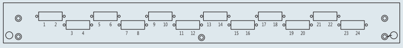
12xE2000 Compact Duplex, straight fixing = 24xE2000



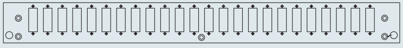
12xE2000 Compact Duplex, oblique fixing = 24xE2000



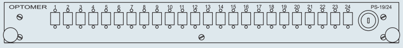
12 SC duplex = 24 SC



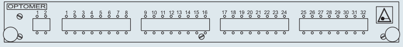
24 SC duplex = 48 SC



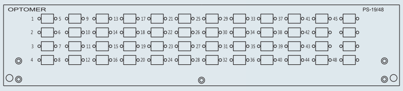
24 SC/E2000 (key locked)*


OPTOMER
PS-19/24

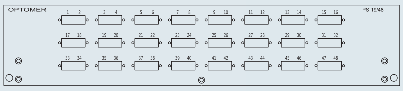
for 1x32 or 2x32 splitter = (2+32)xE2000/SC



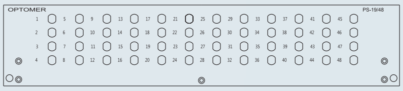
48 E2000/SC*


OPTOMER
PS-19/48

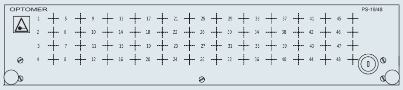
24 SC duplex = 48 SC


OPTOMER
PS-19/48

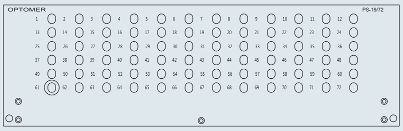
48 ST/FC


OPTOMER
PS-19/48

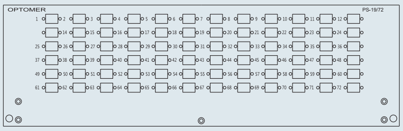
48 E2000/SC/ST/FC (key locked)*


OPTOMER
PS-19/48

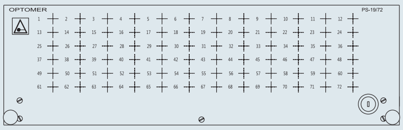
72 ST/FC


OPTOMER
PS-19/72

72 E2000/SC*


OPTOMER
PS-19/72

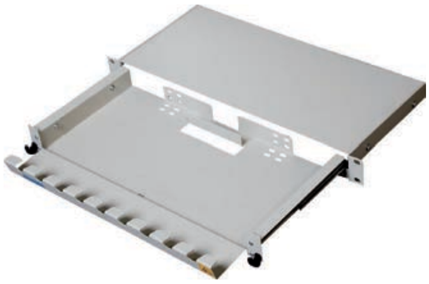
72 E2000/SC/ST/FC (key locked)*


OPTOMER
PS-19/72

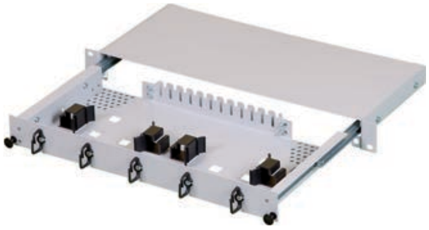
* - posssibility of installation of LC Duplex adapters in E2000/SC cut-outs

19” EXCESS CABLE TRAY SZ-19

OPTOCODE E1120



Excess Cable Tray SZ-19L-1U



Excess Cable Tray SZ-19-1U

FEATURES:

- dedicated for installation in 19” racks and cabinets under PS-19 patch panels
- storage and organisation of patchcord excess cable lengths
- proper space between door surface and patch panel front plates for patchcords safety
- installation in 21” and/or 23” racks with the use of AD-19 adapters
- bearing guided draw-out mechanism
- SZ-19L-1U enables the storage of outdoor cable loose tubes routed to PS-19/144 and PS-19/120 equipped with modules MPK-19/12 and MPK-19/12/W

EQUIPPED WITH:

- cable organisers and cable ties
- installation and handling instructions
- installation kit

TECHNICAL SPECIFICATIONS:

	SZ-19-1U	SZ-19-2U	SZ-19L-1U
dimensions: width/height/depth [mm] [mm]	483/44(1U)/270	483/88(2U)/270	483/44(1U)/200
weight [kg]	2		

NOTICE: it is necessary to provide 75 mm distance between the cabinet door and 19” frame

ORDERING:

SZ-19/1U - Excess Cable Tray

TELECOM ACCESS CATV MAN WAN LAN FTTx PON xWDM Industry

OPTOCODE E1190

19” DISTRIBUTION PANEL BK-19

FEATURES:

- draw-out 19” panel with E-2000, SC adapter plate inside the housing
- cross connections between two bundles of 24 pigtail or patchcords each
- front or rear fixing in the 19” rack
- cable protection and safe bending radii when the panel is drown-out and in
- indoor cable bundles coming out of the panel managed with the protective conduits
- installation in 19” racks with minimum depth of 300 mm, e.g. STP-19
- installation in 21” and/or 23” racks with the use of AD-19 adapters

EQUIPPED WITH:

- adapter plate, cable protective conduit
- cable organisers and cable ties
- installation and handling instructions
- installation kit

TECHNICAL SPECIFICATIONS:

	BK 19/24/1	BK 19/24/2
number of splice trays	-	-
maximum number of splices	-	-
adapter capacity	24	
connector standard	E-2000, SC, LC	
LC Duplex adapter capacity	36	
recommended pigtail length [m], 0.9 mm buffered fibre	-	-
number of outdoor cable entries	-	-
dimensions: width/height/depth [mm]	483 /44(1U)/280	
weight [kg]	1.5	
mounting brackets position	front	rear

19” Distribution Panel BK-19/24/1

ORDERING:

BK-19/24/1 - 19” Distribution Panel, capacity 24xE-2000/SC adapters, front fixing

OPTOCODE E1200

19” PATCH PANEL BPK-19

FEATURES:

- outdoor cable fibres to pigtails splicing, pigtail-pigtail or pigtail-patchcord cross-connections
- hinged tray with adapter plate for 24 or 72 E-2000 or SC adapters
- KSQ or KS-3E splice trays on the panel bottom
- cable protection and safe bending radii when the panel is drown-out and back in
- front or rear fixing in the 19” rack
- indoor cable bundles coming out of the panel managed with the protective conduits
- installation in 19” racks with minimum depth of 300 mm, e.g. STP-19
- installation in 21” and/or 23” racks with the use of AD-19 adapters

EQUIPPED WITH:

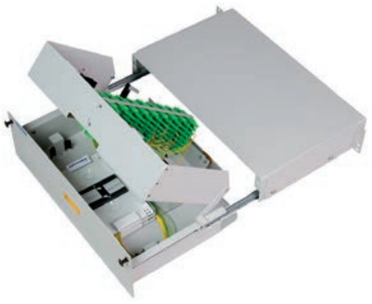
- adapter plate, cable protective conduit
- cable organisers and cable ties
- installation and handling instructions
- installation kit
- splice trays

19” Patch Panel BPK-19/24/1

TECHNICAL SPECIFICATIONS:

	BPK-19/24/1	BPK-19/24/2	BPK-19/72/1	BPK-19/72/2
number of splice trays	2 x KSH		3 x KS-3E	
maximum number of splices	24		72	
adapter capacity	24		72	
connector standard	E-2000, SC, LC			
LC Duplex adapter capacity	36*		96*	
recommended pigtail length [m], 0.9 mm buffered fibre	1,5			
number of outdoor cable entries	1			
dimensions: width/height/depth [mm]	483/44(1U)/280		483/132(3U)/280	
weight [kg]	1.9		3.5	
mounting brackets position	front	rear	front	rear

* - for duplex connectors the number of splice trays should be icreased respectively



19” Patch Panel BPK-19/72/2

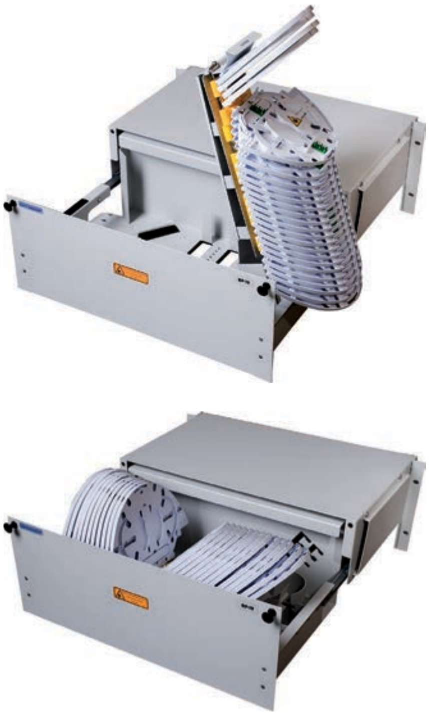
ORDERING:

BPK-19/24/1 - 19” Patch Panel, capacity 24xE-2000/SC adapters, front fixing

TELECOM ACCESS CATV MAN WAN LAN FTTx PON xWDM Industry

19” SPLICE PANEL BP-19

OPTOCODE E1210



19” Splice Panel BP-19/288

FEATURES:

- used for various indoor/outdoor cables’ splicing
- easy and safe management of outdoor cable loose tubes guided with the protective tubes routed to splice trays
- rear fixing in STP-19 cabinets
- grouping the fibres from the outdoor cable loose tubes into required fibre count bundles with the use of fibre manifolds R-06

EQUIPPED WITH:

- KSH splice trays
- splice tray retaining blocks
- fibre manifold R-06 (optional)
- cable orgsnisers and cable ties
- installation and handling instructions
- installation kit

TECHNICAL SPECIFICATIONS:

	BP-19/72	BP-19/144	BP-19/216	BP-19/288
number of splice trays	6 x KSH	12 x KSH	18 x KSH	24 x KSH
maximum number of splices	72	144	216	288
adapter capacity	-	-	-	-
connector standard	-	-	-	-
recommended pigtail length [m], 0.9 mm buffered fibre	2.5			
number of outdoor cable entries	2			
dimensions: width/height/depth [mm] [mm]	483/176(4U)/280			
weight [kg]	2.8			
mounting brackets position	rear			

ORDERING:

BP-19/288 - 19” Splice Panel, splice capacity 288 splices, rear fixing

TELECOM ACCESS CATV MAN WAN LAN FTTx PON xWDM Industry

OPTOCODE E1130

PS-19/120/3U MODULAR PATCH PANEL

FEATURES:

- up to 10 modules MPS-19/12/K or MPS-19/12
- quick and reliable fibre links configuration
- easy acess for performing control and maintenance measurements
- MPS-19/0 module dedicated for port descriptions
- blank plates PZ-3U-8 (width 40 mm) to cover unused space in the panel
- installation in 19” racks with minimum depth of 300 mm, e.g. STP-19
- installation in 21” and/or 23” racks with the use of AD-19 adapters

EQUIPPED WITH:

- one module for port descriptions
- blank plate (optional)
- installation and handling instructions
- installation kit

TECHNICAL SPECIFICATIONS:

	PS-19/120/3U
number of splice trays	max. 10 x KSQ
maximum number of splices	12 per module
adapter capacity	10 modules x12 pcs = 120
connector standard	E-2000, SC, FC, ST
recommended pigtail length [m], 0.9 mm buffered fibre	1 - 1.5
number of outdoor cable entries	10
dimensions: width/height/depth [mm] [mm]	483/132 (3U)/210
weight [kg]	4
number of modules	10
module type	MPS-19/12 or MPS-19/12/K
mounting brackets position	front

Modular Patch Panel PS-19/120/3U

ORDERING:

PS-19/120/3U - Modular Patch Panel, height 3U

OPTOCODE E1140

MODULES MPS-19/12, MPS-19/12/K

FEATURES:

- dedicated for modular patch panels PS-19/120/3U
- termination of up to 12 fibres
- MPS-19/12/K module eliminates the use of separate outdoor excess fibre length tray

EQUIPPED WITH:

- module frame
- dapter plate
- splice tray KSQ
- excess pigtail cable length basket
- outdoor cable loose tube excess length basket (MPS-19/12/K)
- installation and handling instructions

TECHNICAL SPECIFICATIONS:

	MPS-19/12	MPS-19/12/K
adapter capacity	12	
connector standard	E-2000, SC, FC, ST	
recommended pigtail length [m], 0.9 mm buffered fibre	1 - 1.5	
dimensions: width/height/depth [mm] [mm]	40/132 (3U)/210	40/132 (3U)/270

Module MPS-19/12

Module MPS-19/12/K

ORDERING:

MPS-19/12/K/E/SC - module for 12 pigtails and 12 adapters E2000 or SC for PS-19/120/3U

(K - outdoor cable fibre excess length tray))

TELECOM ACCESS CATV MAN WAN LAN FTTx PON xWDM Industry

PS-19/144/3U MODULAR PATCH PANEL

OPTOCODE E1150

FEATURES:

- capacity up to 12 modules MPS-19/12/W
- quick and reliable fibre links configuration
- easy acess for making control and maintenance measurements
- storage and organisation of outdoor cale loose tubes requires application of 19” Excess Cable Tray SZ-19L-1U
- blank plates PZ-3U-7 (width 35 mm) to cover unused space in the panel
- installation in 19” racks with minimum depth of 300 mm, e.g. STP-19
- installation in 21” and/or 23” racks with the use of AD-19 adapters

EQUIPPED WITH:

- cable ties and cable bands
- installation and maintenance instructions
- installation kit
- 19” Excess Cable Tray SZ-19L-1U (optional)
- blank plate (optional)

Modular Patch Panel PS-19/144/3U

TECHNICAL SPECIFICATIONS:

	PS-19/144/3U
number of splice trays	max. 12 x KSQ
maximum number of splices	12 per module
adapter capacity	12 modules x 12 pcs = 144
connector standard	E-2000, SC
recommended pigtail length [m], 0.9 mm buffered fibre	1 - 1.5
number of outdoor cable entries	12
dimensions: width/height/depth [mm]	483/132 (3U)/210
weight [kg]	4
number of modules	12
module type	MPS-19/12/W
mounting brackets position	front

ORDERING:

PS-19/144/3U - Modular Patch Panel, height 3U

MODULE MPS-19/12/W

OPTOCODE E1160

FEATURES:

- dedicated for PS-19/144/3U
- termination of up to 12 fibres

EQUIPPED WITH:

- module frame
- adapter plate
- splice tray KSQ
- pigtail excess cable length basket
- installation and maintenance instructions

Module MPS-19/12/W

TECHNICAL SPECIFICATIONS:

	MPS-19/12/W
adapter capacity	12
connector standard	E-2000, SC
recommended pigtail length [m], 0.9 mm buffered fibre	1 - 1.5
dimensions: width/height/depth [mm]	35/132 (3U)/210

ORDERING:

MPS-19/12/W/E/SC - module for 12 pigtails and 12 adapters E2000 or SC dedicated for modular patch panels PS-19/144/3U

MPS-19/12W/K/12E2A - complete module equipped with 12 pigtails and 12 adapters E2000/APC dedicated for modular patch panels PS-19/144/3U

TELECOM ACCESS CATV MAN WAN LAN FTTx PON xWDM Industry

OPTOCODE E1170

PS-19/144/4U MODULAR PATCH PANEL

FEATURES:

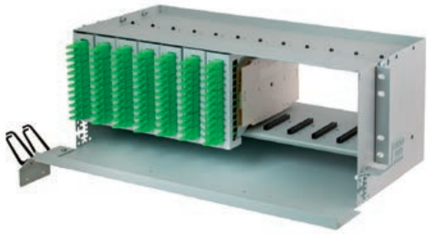
- capacity up to 12xMPK-12 modules
- quick and reliable fibre links configuration
- easy acess for making control and maintenance measurements
- height 4U, includes integrated 1U patchcord cable or outdoor cable loose tube excess lengths tray
- outdoor cable loose tubes organiser alows fixation of guiding protective tubes routed to the installed modules
- outdoor cables and patchcords can be routed into the panel from the left or right side
- installation in 19” racks with minimum depth of 300 mm, e.g. STP-19
- installation in 21” and/or 23” racks with the use of AD-19 adapters

EQUIPPED WITH:

- outdoor cable loose tubes and patchcord excess lengths tray
- universal adapter for front or rear fixing in 19” racks
- ingoing outdoor cable loose tubes organiser, outgoing pigtails organiser
- cable ties, cable bands
- installation and maintenance instructions
- installation kit

TECHNICAL SPECIFICATIONS:

	PS-19/144/4U
number of splice trays	max. 12 x KSQ
maximum number of splices	144
adapter capacity	144
connector standard	E-2000, SC
adapter capacity dla złączy duplex LC	96 - 144
recommended pigtail length [m], 0.9 mm buffered fibre	1.5
number of outdoor cable entries	12
dimensions: width/height/depth [mm]	483/177/295
weight [kg]	3.7
number of modules	12
module type	MPK-12
mounting brackets position	rear/front



Modular Patch Panel PS-19/144/4U

ORDERING:

PS-19/144/4U - Modular Patch Panel, height 4U

OPTOCODE E1180

MODULE MPK-12

FEATURES:

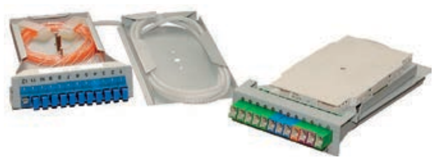
- dedicated for modular Patch Panels PS-19/144/4U and PSU-300/432
- termination of up to 12 fibres
- outdoor cable tight buffered fibres guided into the module in protective tubes
- excess lenght of fibre in the protective tube or loose tube stored in the excess fibre length basket
- accepts multipachcords

EQUIPPED WITH:

- module frame with adapter plate
- splice tray KSQ
- outdoor cable loose tubes basket
- pigtail excess length basket
- installation and maintenance instruction
- installation kit
- protective tube OFBLT 2.5 m

TECHNICAL SPECIFICATIONS:

	MPK -12
adapter capacity	12
connector standard	E-2000, SC
recommended pigtail length [m], 0.9 mm buffered fibre	1.5
dimensions: width/height/depth [mm]	36/128/214



Module MPK-12

ORDERING:

MPK-12/E/SC - module for 12 pigtails and 12 adapters E2000/APC for Modular Patch Panel PS-19/144/4U and Central Office Cabinet PSU-300/432

MPK-14-12E2A-K - complete module equipped with 12 pigtails and 12 adapters E2000/APC for Modular Patch Panel PS-19/144/4U and Central Office Cabinet PSU-300/432

TELECOM ACCESS CATV MAN WAN LAN FTTx PON xWDM Industry

19” CENTRAL OFFICE CABINET STP-19

OPTOCODE E1240

19” Central Office Cabinet STP-19

FEATURES:

- 19” cabinet dedicated for installation in telecommunication central offices
- equipped with PS-19 patch panels provides 1320 fibre terminations
- adjustable positions of fixing rails allow installation of patch panels and active equipment with front or rear mounting
- accepts BPK, BP, BK ver. 1 panels
- cable storage sections on both cabinet sides with safe cable bending radius guides for patchcords management
- double door with perspex window panes providing convenient access to the cabinet interior
- bottom and top cable brush entries
- removable side plates providing easy and convenient access to lateral cable management sections
- possibility of installation of the ventilation panel on top of the cabinet

EQUIPPED WITH:

- wall fixing brackets
- levelling feet
- installation and maintenance instructions
- installation kit

TECHNICAL SPECIFICATIONS:

	STP-19/1.8	STP-19/2.2	STP-19/2.6
installation height of the 19” or 21” cabinet	36U	45U	55U
maximum number of outdoor cables	36 for ø13 mm and 70 for ø6,5 mm		
door	double with window panes		
lateral cable management sections	one section dedicated for outdoor cables the other one for patchcord cables		
housing material/colour	steel sheet, aluminium/RAL 7035		
dimensions: width/height/depth [mm]	900/1800/350	900/2200/350	900/2600/350
mechanical protection IK	IK10		
environmental protection IP	IP20		
weight [kg]	70	86	100

ORDERING:

STP-19/2.2 - 19” Central Office Cabinet STP-19, height 2.2 m

TELECOM ACCESS CATV MAN WAN xWDM Industry

OPTOCODE E1260

PSU-1 (VER. 350 MM) CENTRAL OFFICE CABINET

PSU-1/960/600/350/L

FEATURES:

- cabinet depth 350 mm, dedicated for installation in telecommunication central offices with limited space and high number of cables and connectors
- provides 2304 fibre terminations in two hinged module mounting frames (left and right)
- accepts left and right modules MPK-48-L-35, MPK-48-P-35, MPK-72-L-35, MPK-72-P-35
- minimises initial installation expenditures thanks to the modular construction with MPK modules
- easy and convenient devided access to outdoor cable management section and adapter plate, key locked module mounting frames
- high capacity, ease of installation and efficient fibre management
- top and/or bottom outdoor cable or multipatchcord brush entries
- key locked double door with perspex window panes
- stable and rigid construction

EQUIPPED WITH:

- one or two module mounting frames
- front door
- fibre manifolds R-01C
- splittable protective tube
- installation and maintenance instructions
- installation kit

PSU-1/960/900/350/P

ACCESSORIES

- modules MPK-48-L-35, MPK-48-P-35
- modules MPK-72-L-35, MPK-72-P-35
- patchcord excess length storage module MZK-L-35
- patchcord excess length storage module MZK-P-35
- blank plate PSU-1-Z to cover unused space in the mounting frame

TECHNICAL SPECIFICATIONS:

	PSU-1 /960/600/350 L or P	PSU-1 /960/900/350 L or P	PSU-1 /1920/1200/350/2.2	PSU-1 /1920/1200/600/2.6
number of lateral cable management sections	1 (left or right)	1 (left or right)	2	2
number of splice trays	80 x KSQ	80 x KSQ	160 x KSQ	192 x KSQ
maximum number of splices	960	960	960 x 2 = 1920	2 x 1152 = 2304
module type	MPK-48 lub MPK-72			
number of modules	20 x MPK-48 or 12 x MPK-72 + 2 x MPK-48	20 x MPK-48 or 12 x MPK-72 + 2 x MPK-48	40 x MPK-48 or 24 x MPK-72 + 4 x MPK-48	48 x MPK-48 or 32 x MPK-72
connector standard	E-2000, SC			
adapter capacity	960 (48 or 72 per module)		1920 (48 or 72 per module)	2304 (48 or 72 per module)
number of outdoor cable entries	26	26	52	52
maximum diameter of input cable [mm]	50			
dimensions: width/height/depth [mm]	600/2200/350	900/2200/350	1200/2200/350	1200/2600/350
recommended pigtail length [m], 0.9 mm buffered fibre	1.5			
weight [kg]	90	115	145	170
housing material/colour	steel sheet/RAL 7035			

ORDERING:

PSU-1/1920/1200/350 - cabinet with two hinged module mounting frames, 1920 fibre termination capacity, width 1200 m, depth 350 mm

PSU-1/960/600/350L - cabinet with single hinged module mounting frame located on the left side of the cabinet, 960 fibre termination capacity, width 600 m, depth 350 mm

PSU-1/1920/1200/350/2.2

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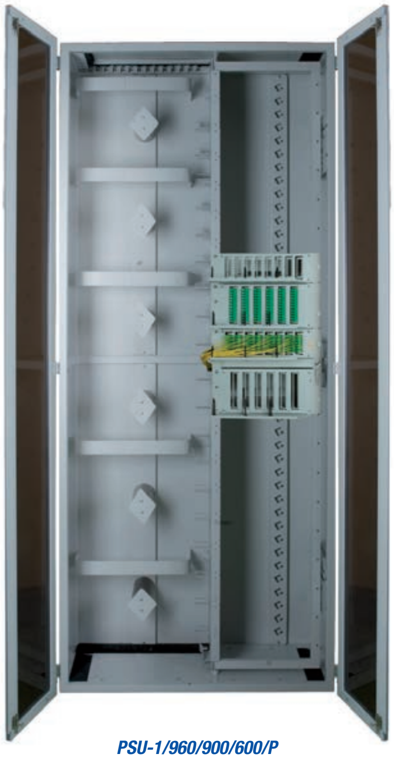
PSU-1 (VER. 600 MM) CENTRAL OFFICE CABINET

OPTOCODE E1250


PSU-1/960/900/600/P

FEATURES:

- cabinet depth 600 mm, dedicated for installation in telecommunication central offices with limited space and high number of cables and connectors
- provides 2304 fibre terminations in two hinged module mounting frames (left and right)
- accepts left and right modules MPK-48-L-60, MPK-48-P-60, MPK-72-L-60, MPK-72-P-60
- minimises initial installation expenditures thanks to the modular construction with MPK modules
- easy and convenient devided access to outdoor cable management section and adapter plate, key locked module mounting frames
- high capacity, ease of installation and efficient fibre management
- top and/or bottom outdoor cable or multipatchcord brush entries
- key locked door with perspex window panes
- patchcord excess length management section
- stable and rigid construction

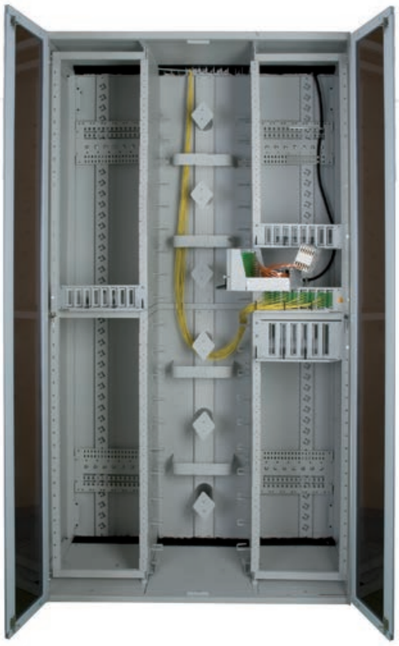
EQUIPPED WITH:

- one or two module mounting frames
- front door
- fibre manifolds R-01C
- splittable protective tube
- cable band
- installation and maintenance instructions
- installation kit

ACCESSORIES

- modules MPK-48-L-60, MPK-48-P-60
- modules MPK-72-L-60, MPK-72-P-60
- patchcord excess length storage module MZK-L-60
- patchcord excess length storage module MZK-P-60
- blank plate PSU-1-Z to cover unused space in the mounting frame

TECHNICAL SPECIFICATIONS:


PSU-1/1920/1200/600/2.2

	PSU-1/960/900/600 L lub P	PSU-1 /1920/1200/600/2.2	PSU-1 /1920/1200/600/2.6
number of lateral cable management sections	1 (left or right)	2	2
number of splice trays	80 x KSQ	160 x KSQ	192 x KSQ
maximum number of splices	960	2 x 960 = 1920	2 x 1152 = 2304
module type	MPK-48 or MPK-72		
number of modules	20 x MPK-48 or 12 x MPK-72 + 2 x MPK-48	40 x MPK-48 or 24 x MPK-72 + 4 x MPK-48	48 x MPK-48 or 32 x MPK-72
connector standard	E-2000, SC		
adapter capacity	960 (48 or 72 per module)	1920 (48 or 72 per module)	2304 (48 or 72 per module)
number of outdoor cable entries	26	52	52
maximum diameter of input cable [mm]	50		
dimensions: width/height/depth [mm]	900/2200/600	1200/2200/600	1200/2600/600
recommended pigtail length [m], 0.9 mm buffered fibre	1.5		
weight [kg]	130	170	200
housing material/colour	steel sheet/RAL 7035		

ORDERING:

PSU-1/1920/1200/600 - cabinet with two hinged module mounting frames, 1920 fibre termination capacity, width 1200 m, depth 600 mm

PSU-1/960/900/600L - cabinet with single hinged module mounting frame located oo the left side of the cabinet, 960 fibre termination capacity, width 900 m, depth 600 mm

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OPTOCODE E1270

MODULES MPK-48, MPK-72 (FOR PSU-1)

FEATURES:

- MPK-48 and MPK-72 modules are designed for installation in PSU-1 cabinets
- capacities: 48 (MPK-48), 72 (MPK-72) E2000, SC or LC connectors/adapters
- outdoor cable loose tube storage basket at the module bottom
- MPK modules accept multipatchcords, fibres entering the module routed in splittable protective tube
- module heights: MPK-48 100 mm, MPK-72 150 mm
- hinged splice trays provide easy and quick splice instalation and organisation

EQUIPPED WITH:

- hinged module fixing
- adapter plate
- KSQ splice trays
- cable ties and cable bands
- installation and maintenance instructions
- installation kit

CONFIGURATIONS:

A	B	C	D	E	DESCRIPTION
MPK					module dedicated for PSU-1 cabinet
	48				module capacity
	72				module capacity
		L			cabinet type, hinged frame type (L-left)
		P			cabinet type, hinged frame type (P-right)
			35		cabinet depth 350 mm
			60		cabinet depth 600 mm
				48E2A-K	equipped with 48 pigtails and 48 adapters E2000/APC
				48SCA-K	equipped with 48 pigtails and 48 adapters SC/APC
				72SCP-K	equipped with 72 pigtails and 72 adapters SC/APC
				72LCP-K	equipped with 72 pigtails and 72 adapters LC/APC

ORDERING:

MPK-48-L-35-48E2A-K - module for PSU-1 cabinet with single module mounting frame installed on the left cabinet side, depth 350 mm, equipped with 48 E2000/APC pigtails and adapters

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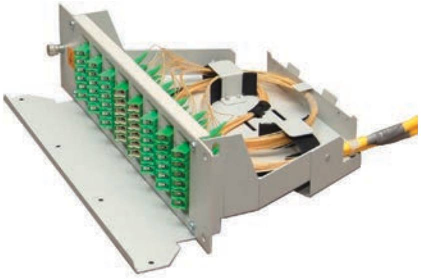
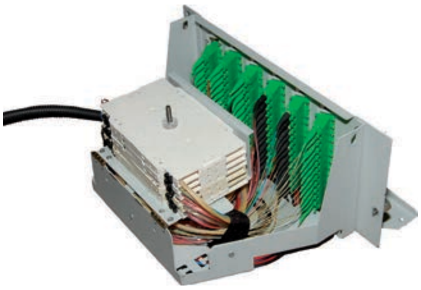

Module MPK-48 (for PSU-1)


Module MPK-72 (for PSU-1)

PSU-300/432 CENTRAL OFFICE CABINET

OPTOCODE E1280

Central office cabinet PSU-300/432

FEATURES:

- dedicated for installation in telecommunication central offices with limited space and high number of cables and connectors
- provides 432 fibre terminations in compact housing
- accepts 36 MPK-12 modules
- minimises initial installation expenditures thanks to the modular construction with MPK-12 modules
- high capacity, ease of installation and efficient fibre management
- top and/or bottom outdoor cable or multipatchcord brush entries
- key locked door
- stable and rigid construction

EQUIPPED WITH:

- housing, key locked front door
- outdoor cable fixing and fibre distribution plate
- indoor cable fixing plate
- installation and maintenance instructions
- installation kit

ACCESSORIES

- MPK-12 modules
- fibre manifold R-01A - for 144 fibre count outdoor cable (option)
- fibre manifold R-01E - for 48 fibre count outdoor cable (option)

TECHNICAL SPECIFICATIONS:

	PSU-300/432
number of cable management sections	1
number of splice trays	36 x KSQ
maximum number of splices	432
module type	MPK-12
number of modules	36
connector standard	E-2000, SC
adapter capacity	432
number of outdoor cable entries	-
maximum diameter of input cable [mm]	22
dimensions: width/height/depth [mm] [mm]	300/2200/300
recommended pigtail length [m], 0.9 mm buffered fibre	1.5
weight [kg]	90
housing material/colour	steel sheet/RAL 7035

ORDERING:

PSU-300/432 - central office cabinet with 432 fibre termination capacity, width 300 mm, depth 300 mm

OPTOCODE E1180

MODULE MPK-12 (FOR PSU-300/432)

FEATURES:

- MPK-12 module designed for installation in central office cabinets PSU-300/432
- termination of up to 12 fibres
- outdoor cable loose tubes routed into the module in protective tubes
- excess fibre length storage basket, fibres in outdoor cable loose tubes or in additional protection tubes
- accepts multipatchcords

Module MPK-12

EQUIPPED WITH:

- module frame with adapte plate
- KSQ splice tray
- outdoor cable loose tube basket
- installation and maintenance instructions
- installation kit
- OFBLT protective tube 2.5 m

TECHNICAL SPECIFICATIONS:

	MPK-12
adapter capacity	12
connector standard	E-2000, SC
recommended pigtail length [m], 0.9 mm buffered fibre	1.5
dimensions: width/height/depth [mm] [mm]	36/128/ 214

ORDERING:

MPK-12/E/SC - module for PS-19/144/4U and PSU-300/432, capacity: 12 adapters and 12 pigtails, standard E2000 or SC
MPK-12-12E2A-K - module for PS-19/144 and PSU-300/432 equipped with 12 pigtails and 12 adapters E2000/APC

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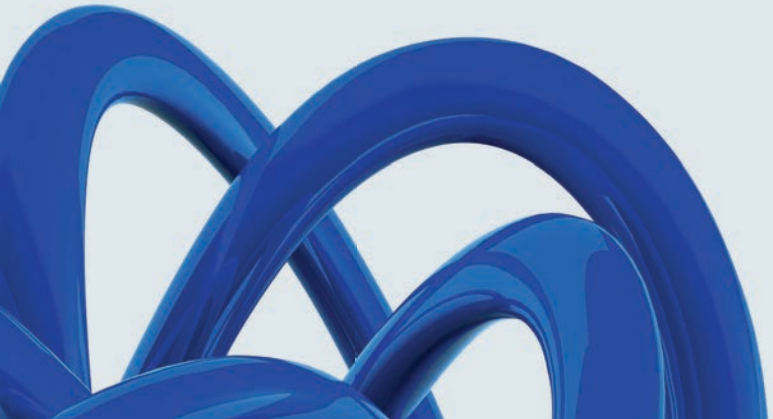

PS-4 FIBRE OPTIC DISTRIBUTION FRAME

OPTOCODE E1290

Fibre optic distribution frame PS-4

FEATURES:

- dedicated for installation in telecommunication central offices with limited space and high number of cables and connectors
- provides from 72 fibre terminations in PS-4/72 up to 336 in PS-4/320
- splice tray, outdoor cable excess length fibre and pigtail storage sections in the bottom part of the cabinet
- draw-out adapter frame for E2000 or SC adapter standards, other adapter standards available optionally
- separate pigtail and patchcord sections
- recommended pigtail length: 6 m, 2.0 mm or 2.4 mm cable diameter

EQUIPPED WITH:

- cabinet with draw-out adapter frame
- installation and maintenance instructions
- installation kit

ACCESSORIES

- KS-3E splice trays, ordered separately
- FC, ST adapter plates

TECHNICAL SPECIFICATIONS:

	PS-4/72	PS-4/96	PS-4/144	PS-4/160	PS-4/192	PS-4/288	PS-4/320
number of cable management sections	1						
number of splice trays KS-3E	3	4	6	7	8	12	14
maximum number of splices	72	96	144	168	192	288	336
module type	-						
number of modules	-						
connector standard	E-2000/SC/LC (ST/FC)	E-2000/SC/LC (ST/FC)	E-2000/SC/LC (ST/FC)		E-2000/SC/LC (ST/FC)		
adapter capacity	72 (45)	160 (100)	160 (100)		320 (200)		
number of outdoor cable entries	-						
maximum diameter of input cable [mm]	18						
dimensions: width/height/depth [mm]	120/2200*/ 240	120/2000/ 240	240/2200*/ 240	240/2200*/ 240	480/2200*/ 240	480/2200*/ 240	480/2200*/ 240
recommended pigtail length [m], 0.9 mm buffered fibre	6						
weight [kg]	35	66	66	66	75	75	75
housing material/colour	steel sheet/RAL 7035						

* 2600 mm height available upon request

ORDERING:

PS-4/144/2.2/E2000-SC - Fibre Optic Distribution Frame, height 2.2 m, capacity: 144xE-2000, SC adapter positions

TELECOM ACCESS CATV MAN WAN xWDM Industry

OPTOCODE E1300

STREET CABINETS PU

FEATURES:

- outdoor cabinet dedicated for optical access nodes
- resistant to direct influence of environmental conditions
- mounting height 20U, 30U, 33U, 66U
- accepts 19” or 21” panels
- allows installation of passive optical components
- allows application of microduct systems, provides subduct entries
- cable glands protect against humidity penetration
- active equipment, electrical devices, industrial automation equipment mounted on the DIN rail
- placement on the concrete plinth with threaded pins screwed to the cabinet body (plinth included in the installation kit)
- IP54 rated environmental protection

EQUIPPED WITH:

- concrete plinth
- outdoor cable fixing and fibre distribution plate
- patchcord guides and organisers
- cable glands
- installation and maintenance instructions
- installation kit

ACCESSORIES

- heater, thermostat, fan
- DIN rail (width 35 mm)
- roof with retractable hood
- microduct fixing facilities
- fibre manifolds R-01A, R-01C, R-01F

TECHNICAL SPECIFICATIONS:

	PU-5	PU-7	PU-10	PU-20
installation height of the 19” or 21” cabinet	20U	30U	33U	66U
maximum number of outdoor cables	32 for ø13 mm			
door	double door			
number of lateral cable management sections	two: left and right			
housing material/colour	aluminium sheet/RAL 7035			
dimensions: width/height/depth [mm]	858/1170/465	858/1615/465	858/1752/465	1716/1752/465
mechanical protection IK	IK10			
environmental protection IP	IP54			
weight [kg]	37	45	50	98

ORDERING:

PU-10 - Street Cabinet, installation height 33U

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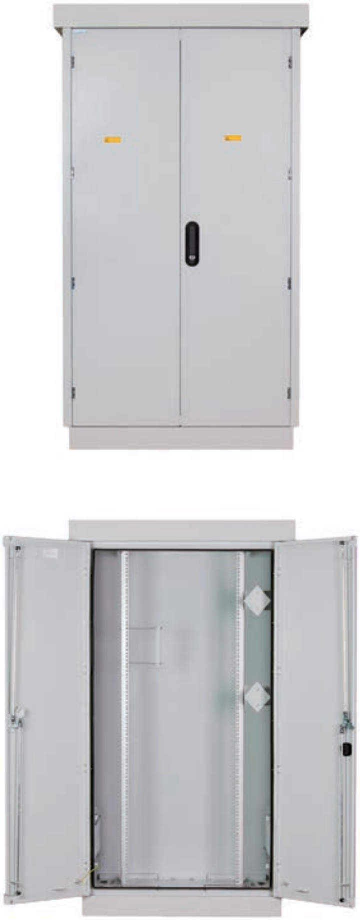


Street Cabinet PU-7

Concrete plinth

OPTICAL DISTRIBUTION FRAMES - SUMMARY

WALL MOUNTED DISTRIBUTION BOXES

	PS-3/24	PS-3/48	PS-3/72	PS-5/12	PS-5/24	PS-8/12	PSW-12/DIN	PSM-4/DIN	PSH-3/12	PSH-2/12	PSH-2/24	PSH-2/48	PSH-2/72	PSH-2/96	PSH-2/144
number of splice trays	1 x KS-3E	2 x KS-3E	3 x KS-3E	1 x KS-3E		1 x KSQ	1 x KSQ	-*	1 x KSQ	2 x KS-3E		4 x KS-3E	6 x KS-3E	8 x KS-3E	12 x KS-3E
maximum number of splices	72			24		12	12	4/ max. 8	12	24	48	48	72	96	144
adapter capacity	24	48	72	12	24	12	12	4	12	12	24	48	72	96	144
connector standard	E-2000, SC, FC, ST, LC			E-2000, SC, FC, ST, LC		E-2000, SC, FC, ST, LC	E-2000, SC, FC, ST, LC	E-2000, SC	E-2000, SC, FC, ST	E-2000, SC, FC, ST					E-2000, SC, LC
recommended pigtail length [m], 0.9 mm buffered fibre	2.5			1.5		1.5	1.5	0.5	1.5	2.5		3		4	
recommended pigtail length [m], 2 mm cable diameter	2.5			1.5		1.5	-	-	-	2.5				3	4
number of outdoor cable entries	6			4		2	2	4	2	4		8			12
maximum diameter of input cable [mm]	14			14		14	10	10	14	18				21	26
dimensions: width/height/ depth [mm]	360/400/150			250/400/100		135/340/90	220/120/40	90/145/20	140/230/90	300/400/200		400/500/200		500/600/230	800/600/300
weight [kg]	6			3		1.5	1.2	0.5	0.7	5.8		7.5	8	11	26
housing material/colour	steel sheet/RAL 7035			steel sheet/RAL 7035		steel sheet/RAL 7035	steel sheet/RAL 7035	steel sheet/ RAL 7035	ABS or PC/RAL 7035	glass fibre reinforced polyester/RAL 7035					
mechanical protection IK	IK08			IK08		IK08	IK08	IK08	IK07/IK08	IK10					
environmental protection IP	IP51			IP51		IP51	IP20	IP20	IP65	IP66					
OPTOCODE	E1000			E1010		E1020	E1040	E1060	E1070	E1030					

* - splice protector holder

Indoor 19” Fibre Optic Distribution Patch Panels and Splice Panels

	PS-19/12 1U	PS-19/24 1U	PS-19/48 1U	PS-19/48 2U	PS-19/72 3U	PS-19/144/4U	PS-19/120/3U	PS-19/144/3U	BPK-19/24/1	BPK-19/24/2	BPK-19/72/1	BPK-19/72/2	BK-19/24/1	BK-19/24/2	BP-19/72	BP-19/144	BP-19/216	BP-19/288
number of splice trays	1 x KS-3E		2 x KS-3E		3 x KS-3E	max. 12 x KSQ	max. 10 x KSQ	max. 12 x KSQ	2 x KSH		3 x KS-3E		-	-	6 x KSH	12 x KSH	18 x KSH	24 x KSH
maximum number of splices	24		24		72	144	12 per module	12 per module	48		72		-	-	72	144	216	288
adapter capacity	12	24	48		72	144	10 modules x12 pcs = 120	12 modules x12 pcs = 144	24		72		24		-	-	-	-
connector standard	E-2000, SC, FC, ST, LC		duplex LC	E-2000, SC, FC, ST, LC		E-2000, SC	E-2000, SC, FC, ST	E-2000, SC	E-2000, SC, LC				E-2000, SC, LC		-	-	-	-
LC Duplex adapter capacity	24	48*	48	96*	144*	96	120	144	36*		96*		36		-	-	-	-
recommended pigtail length [m], 0.9 mm buffered fibre	2.5					1.5	1 - 1.5	1 - 1.5	1.5				-	-	2.5			
number of outdoor cable entries	1					12	10	12	1				-	-	2			
dimensions: width/height/ depth [mm]	483/44/200			483/88 /200	483/132 /200	483/177/295	483/132 (3U)/210	483/132 (3U)/210	483/44(1U)/280		483/132(3U)/280		483/44(1U)/280		483/176(4U)/280			
weight [kg]	2.5			2.9	3.3	3.7	4	4	1.9		3.5		1.5		2.8			
number of modules	-	-	-	-	-	12	10	12	-	-	-	-	-	-	-	-	-	-
module type	-	-	-	-	-	MPK-12	MPS-19/12 or MPS-19/12/K	MPS-19/12/W	-	-	-	-	-	-	-	-	-	-
mounting brackets position	front					rear/front	front	front	front	rear	front	rear	front	rear	rear			
housing material/colour	steel sheet/RAL 7035					steel sheet/ RAL 7035	steel sheet/ RAL 7035	steel sheet/ RAL 7035	steel sheet/RAL 7035		steel sheet/RAL 7035		steel sheet/RAL 7035					
OPTOCODE	E1110					E1170	E1130	E1150	E1200				E1190		E1210			

* - the use of duplex adapters requires a corresponding increase in splice trays number

SPLICE BOXES

	MK-5/24	MK-5/48	MK-5/72	NMS-4	NMS-6	MSW-12	MK-72	MK-144
number of splice trays	1 x KS-3E	2 x KS-3E	3 x KS-3E	-*		1 x KSQ	3 x KS-3E (max. 9 x KS-3E)	6 x KS-3E (max. 18 x KS-3E)
maximum number of splices	24	48	72	4	6	12	72 (max. 216)	144 (max. 432)
number of cable inputs/outputs	2/2			2/2	10/12	1/1	2/24	4/40
maximum cable diameter [mm]	14			10	11	10	4 for 18 and 22 for 12	2 for 18 and 42 for 12
dimensions: width/height/depth [mm]	250/400/50			130/35/80	120/70/170	220/123/40	470/120/430	820/120/430
housing material/colour	steel sheet/RAL 7035			ABS		steel sheet/RAL 7035	steel sheet/RAL 7035	
mechanical protection IK	IK08			IK08			IK08	
environmental protection IP	IP51			IP65	IP54	IP20	IP51	
OPTOCODE	E1090			E1080	E1085	E1050	E1100	

* - splice protector holder

CENTRAL OFFICE FIBRE OPTIC DISTRIBUTION FRAMES

	PSU-1 /960/900/600 L or P	PSU-1 /1920/1200 /600/2.2	PSU-1 /1920/1200 /600/2.6	PSU-1 /960/600/350 L or P	PSU-1 /960/900/350 L or P	PSU-1 /1920/1200 /350/2.2	PS-4/72	PS-4/96	PS-4/144	PS-4/160	PS-4/192	PS-4/288	PS-4/320
number of lateral cable management sections	1 (left or right)	2	2	1 (left or right)	1 (left or right)	2	1						
number of splice trays	80 x KSQ	160 x KSQ	192 x KSQ	80 x KSQ	80 x KSQ	160 x KSQ	3 x KS-3E	4	6	7	8	12	14
maximum number of splices	960	2 x 960 = 1920	2 x 1152 = 2304	960	960	960 x 2 = 1920	72	96	144	168	192	288	336
module type	MPK-48 or MPK-72			MPK-48 or MPK-72			-						
number of modules	20 x MPK-48 or 12 x MPK-72 + 2 x MPK-48	40 x MPK-48 or 24 x MPK-72 + 4 x MPK-48	48 x MPK-48 or 32 x MPK-72	20 x MPK-48 or 12 x MPK-72 + 2 x MPK-48	20 x MPK-48 or 12 x MPK-72 + 2 x MPK-48	40 x MPK-48 or 24 x MPK-72 + 4 x MPK-48	-						
connector standard	E-2000, SC			E-2000, SC			E-2000/SC/LC (ST/FC)	E-2000/SC/LC (ST/FC)	E-2000/SC/LC (ST/FC)		E-2000/SC/LC (ST/FC)		
adapter capacity	960 (48 or 72 per module)	1920 (48 or 72 per module)	2304 (48 or 72 per module)	960 (48 or 72 per module)		1920 (48 or 72 per module)	72 (45)	160 (100)	160 (100)		320 (200)		
number of outdoor cable entries	26	52	52	26	26	52	-						
maximum diameter of input cable [mm]	22			22			18						
dimensions: width/height/depth [mm]	900/2200/600	1200/2200/600	1200/2600/600	600/2200/350	900/2200/350	1200/2200/350	120/2200 /240 120/2600 /240	120/2000/240	240/2200 /240 240/2600 /240	240/2200 /240 240/2600 /240	480/2200 /240 480/2600/ 240	480/2200 /240 480/2600 /240	480/2200 /240 480/2600 /240
recommended pigtail length [m], 0.9 mm buffered fibre	1.5			1.5			6						
weight [kg]	130	170	200	90	115	145	35	66	66	66	75	75	75
housing material/colour	steel sheet/RAL 7035			steel sheet/RAL 7035			steel sheet/RAL 7035						
OPTOCODE	E1250			E1260			E1290						

STREET CABINETS AND CENTRAL OFFICE CABINETS

	PU-5	PU-7	PU-10	PU-20	STP-19/1.8	STP-19/2.2	STP-19/2.6
installation height of the 19” or 21” cabinet	20U	30U	33U	66U	36U	45U	55U
maximum number of outdoor cables	32 for ø13 mm				36 for ø13 mm and 70 for ø6,5 mm		
door	double door				double with window panes		
number of lateral cable management sections	2, left or right				one section dedicated for outdoor cables, one for patchcord cables		
housing material/colour	aluminium sheet/RAL 7035				steel sheet, aluminium sheet/RAL 7035		
dimensions: width/height/depth [mm]	858/465/1170	858/465/1615	858/465/1752	1716/465/1752	900/1800/350	900/2200/350	900/2600/350
mechanical protection IK	IK10				IK10		
environmental protection IP	IP54				IP20		
weight [kg]	37	45	50	98	70	86	100
OPTOCODE	E1300				E1240		

OPTOCODE E1360

CABLE DUCTING SYSTEM

FEATURES:

- used for organization and protection of fibre optic cables in central office premises
- enables proper cable organisation and management in central offices of high number of incoming fibre units
- possibility of installation under raised floors or above cabinets and frames
- a fully enclosed system with high mechanical durability protecting cables against dirt, dust and mechanical damages
- easy installation with minimum effort and standard tools
- easy access covers enable fibre optic cables to be installed or removed at any time without the need to disconnect the system
- measurements, designing and installation of the ducting system at client's side - includes comprehensive implementation

APPLICATIONS:

- central offices
- computer rooms
- base stations
- telecom containers

TECHNICAL SPECIFICATIONS:

- made of flame returdant plasstic
- yellow colour
- straight duct lengths: 1.8 m, 1.2 m
- duct widths: 50 mm, 100 mm, 200 mm
- UL94 V0 compliance

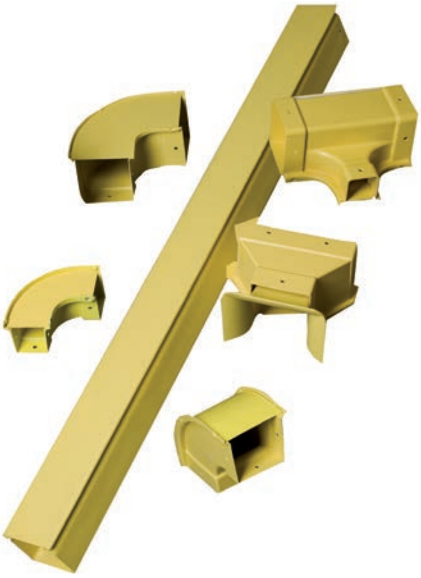
SYSTEM COMPONENTS:

- straight ducts
- elbows
- tees
- 4 way crosses
- ducting splices
- fitting splices
- end caps
- trumpets
- ladder profile ducts
- installation kit
- ladder profile duct installation kit *

* the offer includes designs and a turn key installations

TELECOM CATV

Installation example



Cable duct system

ACCESSORIES FOR DISTRIBUTION FRAMES

OPTOCODE E1220

PK-19

TO-19/1U

AD-19/21 2U

AD-19/21 2U (30)

AD-19/19 1U (50)

PO-1

PO-2

PK-19 Shelf

- installation in 19” racks and cabinets
- pigtail and patchcord excess cable lengths storage, support for measuring equipment
- dimensions: 483/300/44 (1U), 88 (2U) mm
- heights: 1U, 2U

TP-19/12 19” ADAPTER FRONT PLATE

- installation in typical 19” frames or cabinets
- capacity: 12 x E-2000 or SC adapters
- dimensions: 483/44 (1U) mm

TO-19 BLANK FRONT PLATE

- installation in 19” racks or cabinets
- heights: 1U, 2U, 3U
- blank plate to cover unused space in cabinets and racks
- dimensions: 483/44 (1U), 88 (2U), 133(3U) mm

AD-19/21 19” to 21” ADAPTER
AD-19/23 19” to 23” ADATPER

- allows installation of 19” panels in 21” or 23” racks or cabinets
- heights: 1U, 2U, 3U

AD-19/21/1U/30 ADAPTER
AD-19/21/2U/30 ADAPTER

- allows installation of 19” panels in 21” racks or cabinets, front plates shifted back by 30 mm
- heights: 1U, 2U

ADAPTER AD-19/191U/50

- allows installation of 19” panels in 19” racks or cabinets, front plates shifted back by 50 mm
- height: 1U

PO-1 PATCHCORD MANAGEMENT SHELF

- auxiliary accessory for PS-19 patch panels with 200 mm depth
- protects patchcords plugged in the adapter plate agaist accidental damage
- depth 85 mm
- fixing with adapter plate fixing scrws
- no additional fixing components required

PO-2 PATCHCORD MANAGEMENT SHELF

- - auxiliary accessory for PS-19 patch panels with 200 mm depth
- - protects patchcords plugged in the adapter plate agaist accidental damage
- - provides management of patchcords routed to the shelf installed under the patch panel
- - depth 85 mm
- - fixing with adapter plate fixing scrws
- - no additional fixing components required

Notice: all installation kits are dedicated for 19” racks

ORDERING:

PO-1 - Patchcord Management Shelf

TELECOM ACCESS CATV MAN WAN LAN FTTx PON xWDM Industry

OPTOCODE E1230

ACCESSORIES FOR DISTRIBUTION FRAMES

LP-01 CABLE GUIDE

- provides management of outdoor cables and fibres in protective conduits inside optical distribution cabinets
- safe patchcord cable management
- available versions: LP-01L for installation on the left hand side of the cabinet, LP-01P for installation on the right hand side of the cabinet
- dimensions: 110/90/70 mm

LK-01 OUTDOOR CABLE FIXING PLATE

- used to attach outdoor fibre optic cables in 19’’ cabinets, installed close to the cable entries
- dimensions: 483/50 mm

LRK OUTDOOR CABLE FIXING AND FIBRE DISTRIBUTION PLATE

- fixed on the back cabinet plate close to cable entries
- outer cable sheath and cable strength member fixing
- management and organisation of outdoor cable loose tubes
- fibre protective conduits fixing
- fixing of up to 8 fibre manifolds R-01

PP-19 PATCHCORD GUIDE

- management of patchcord cable bundles in 19” and 21” cabinets
- fixed directly to mounting rails or to the installed patch panel
- safe patchcord routing towards the back cabinet plate
- provides clear vertical organisation of patchcord bundles along mounting rails

TU-19 CABLE BRACKET PLATE

- management of patchcord cable bundles in 19” cabinets
- used to conduct patchcords on the left or right side of the cabinet
- dimensions: 483/44(1U) mm

Notce: all installation kits are dedicated for 19” racks

ORDERING:

LRK - Outdoor Cable Fixing And Fibre Distribution Plate

TELECOM ACCESS CATV MAN WAN LAN FTTx PON xWDM Industry

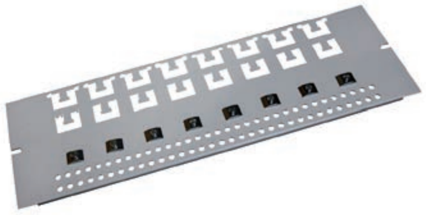
LP-01P

PP-19

LP-19I

TU-19

LK-01

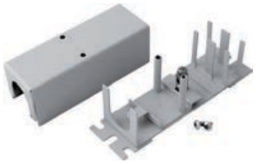

LRK

FIBRE MANIFOLDS

OPTOCODE
E1340

R-01A

R-01C


R-01E

R-01F

R-03

R-06

R-07

R-01A

- accepts 12 OFBLT-P-3.1-0.5-PP protective tubes for outdoor cable fibres distribution
- organises fibres into 12 fiber bundles, that are routed in protective tubes directly to MPS-12, MPK-12 modules
- one protective tube accepts fibres from different outdoor cable loose tubes
- used to feed the required fibre count bundles to PS-19 patch panels and the modules in PSU-300 cabinets
- enables several optical distribution modules to be feeded with fibres from one fibre optic cable

R-01C

- accepts four WOD-10B corrugated tubes as the protection for the distributed outdoor cable loose tubes
- one corrugated tube holds up to 8 outdoor cable loose tubes
- used to feed the required fibre count bundles to PS-19 patch panels and the modules in PSU-1 cabinets
- organises fibres into the required fibre count bundles, that are routed in protective tubes directly to MPK-48 and MPK-72 modules

R-01E

- dedicated for 16 to 48 fibre count cables
- accepts 4 OFBLT-P-3.1-0.5-PP protective tubes for outdoor cable fibres distribution
- one protective tube accepts fibres from different outdoor cable loose tubes
- used to feed the required fibre count bundles to the modules in PSU-300 cabinets
- organises fibres into 12 fibre count bundles, that are routed in protective tubes directly to MPK-12 modules

R-01F

- dedicated for high fobre count cables e.g. 288 fibre count cable with 6 fibre bundles, 48 fibres each
- accepts six WOD-10B corrugated tubes as the protection for the distributed outdoor cable loose tubes
- one corrugated tube holds up to 8 outdoor cable loose tubes
- used to feed the required fibre count bundles to PS-19 patch panels and the modules in PSU-1 cabinets
- organises fibres into the required fibre count bundles, that are routed in protective tubes directly to MPK-48 and MPK-72 modules

R-03

- - outdoor cable termination kit, 2 mm cable diameter fan out
- - 12 or 24 fibre fan outs

R-06

- 2 polyethylene tubes at one end of the moulded distribution box, 6 tubes at the other end
- diametrer of the 2 input tubes: 4 mm, length: 0.15 m each
- diameter of the 6 output tubes: 3 mm, length: 1.5 m each
- polyethylene tubes included

R-07

- hermetic cable gland for 5/8” threaded cable entry
- distribution of outdoor cable fibres inside a cabinet
- used in CATV cabinets

TECHNICAL SPECIFICATIONS:

	R-01A	R-01C	R-01F	R-03	R-07	R-01E	R-06
number of cable entries	1 outdoor cable						2 tubes
outdoor cable outer diameters [mm}	8-16		8-16	7-13	5-10	to 16	4
maximum number of outgoing tubes	12	4	6	12, 24	12	4	6
dimensions: width/height/depth [mm]	45/130/34		44/150/44	ø22, ø25/70	ø25/90	20/150	9/55/14
weight [kg]	0.2					0.1	0.02
fixing	3 x M6 screws, fixed to LR-01 plate			-	5/8”	1 x M6 screw	clip

ORDERING:

R-01A - fibre manifold for 12 protective tubes

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OPTOCODE
E1330

SPLICE TRAYS

FEATURES:

- provide mechanical protection for 12 to 24 splices
- used in fibre optic equipment for organisation of fibre optic splices
- accept passive optical devices e.g. splitters, couplers
- plastic splice trays KS-3E, KSH, KS-Q, ACC
- FSP-45 splice protectors recommended for KS-Q, KSH, ACC1341 splice trays
- OS-60 splice protectors recommended for KS-3E splice trays OS-60

ACCESSORIES

- splice tray cover
- cable bands and cable ties

TECHNICAL SPECIFICATIONS:

	KS-Q	ACC1341 Hellapon	KSH	KS-3E
number of splices	12	16	12	24
applications	PS-19/120 PS-19/144 PSH-3, PS-8	FRBU	UFC, BPK-19, BP-19	PS-3, PS-5, PS-4, PS-19, PSH-2, MK-5, BPK-19, MUF-1, MUF-2
dimensions: width/height/depth [mm]	155/92/8	236/92/8	204/145/7	200/115/10
splice protectors	FSP-45			OS-60

ORDERING:

KS-3E - splice tray for 24 splice protectors

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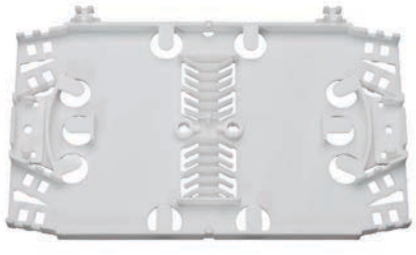
KSH


KS-3E

KS-Q

ACC1341

CABLE ORGANISERS UT

OPTOCODE E1310

UT-25

UT-45

UT-55

UT-85

FEATURES:

- used for cable management
- indoor and outdoor applications in various fibre optic equipment

TECHNICAL SPECIFICATIONS:

	UT-25	UT-45	UT-55	UT-85
height [mm]	25	45	55	85
width [mm]	35	30		52
maximum capacity for 3 mm outer diameter cables	145	75	96	228

ORDERING:

UT-55 - Cable Organiser

HEAT SHRINK SPLICE PROTECTORS

OPTOCODE E1320

OS-60

FSP-45

ANT

FEATURES:

- used for fusion splice mechanical protection
- protection of fusion splices against influence of environmental conditions
- sandwich type aluminium ANT splice protector with mastic hydrophobic stripes

TECHNICAL SPECIFICATIONS:

	FSP-45	OS-60	ANT
length [mm]	45	60	30

ORDERING:

FSP-45 - splice protector, length 45 mm, pack size 80 pcs

TELECOM ACCESS CATV MAN WAN LAN FTTx PON xWDM Industry

OPTOCODE E1350

PROTECTIVE TUBES AND CONDUITS

PROTECTIVE TUBES

FEATURES:

- outdoor cable loose tubes protection inside racks and cabinets
- safe fibre bending radius
- fibre distribution between outdoor cable and distribution modules
- dedicated for application with R-01A and R-01E fibre manifolds

	inner/outer diameter [mm]	type
HDPE	3.0/4.2	protective tube for R-01 fibre manifold
OFBLT-P-3.1.0.5-PP	3.1/5.0	Richco protective tube for R-01 fibre manifold
OFPT-5.0-3.1-WHT-V0-LSZH		flame returdant halogen free fibre protective tube
OFPT-3.0-1.4-PE-WHT-V0-LSZH		

Richco protective tube

ORDERING:

OFBLT-P-3.1.0.5-PP - protective tube, 5 mm diameter

PROTECTIVE CONDUITS

FEATURES:

- outdoor cable loose tubes protection inside and between racks and cabinets
- high crush and bending resistance
- available various types: with pulling wire, splittable, UV stabilised, halogen free, flame returdant, for outdoor applications

	inner/outer diameter [mm]	version
WO-16	10.5/16.0	black corrugated tube with pulling wire - self-extingushing material, for outdoor cable loose tube and patchcord cable protection
WO-20	15.0/20.0	
WO-25	19.0/25.0	
WO-32	26.0/32.0	
WO-40	33.0/40.0	
WO/LSZH-15	11.4/15.0	black corrugated tube with pulling wire - self-extingushing material, halogen free, for outdoor cable loose tube and patchcord cable protection
WO/LSZH-21	16.0/21.0	
WO/LSZH-25	21.0/25.0	
WO/LSZH-32	26.0/32.0	
WO/LSZH-40	32.0/40.0	
WO/LSZH-52	44.0/52.0	
WOD-10B	8.7/13.6	black splittable corrugated tube for outdoor cable loose tube protection
WOD-14B	12.5/18.5	
WOD-20B	19.5/25.5	
WOD-23B	24.2/31.0	
WO/UV-16	10.5/16.0	splittable corrugated tube with pulling wire, UV stabilised, outdoor applications for outdoor cable loose tube and patchcord cable protection
WO/UV-20	15.0/20.0	
WO/UV-25	19.0/25.0	
WO/UV-32	26.0/32.0	
WO/UV-40	33.0/40.0	
WO/UV-50	43.0/50.0	
WO/SP-PU-30	30.0/36.0	corrugated tube, UV stabilised, outdoor applications

Protective tubes

ORDERING:

WOD-14B - corrugated splittable protective tube, inner diameter 12.5 mm, outer diameter 18.5 mm

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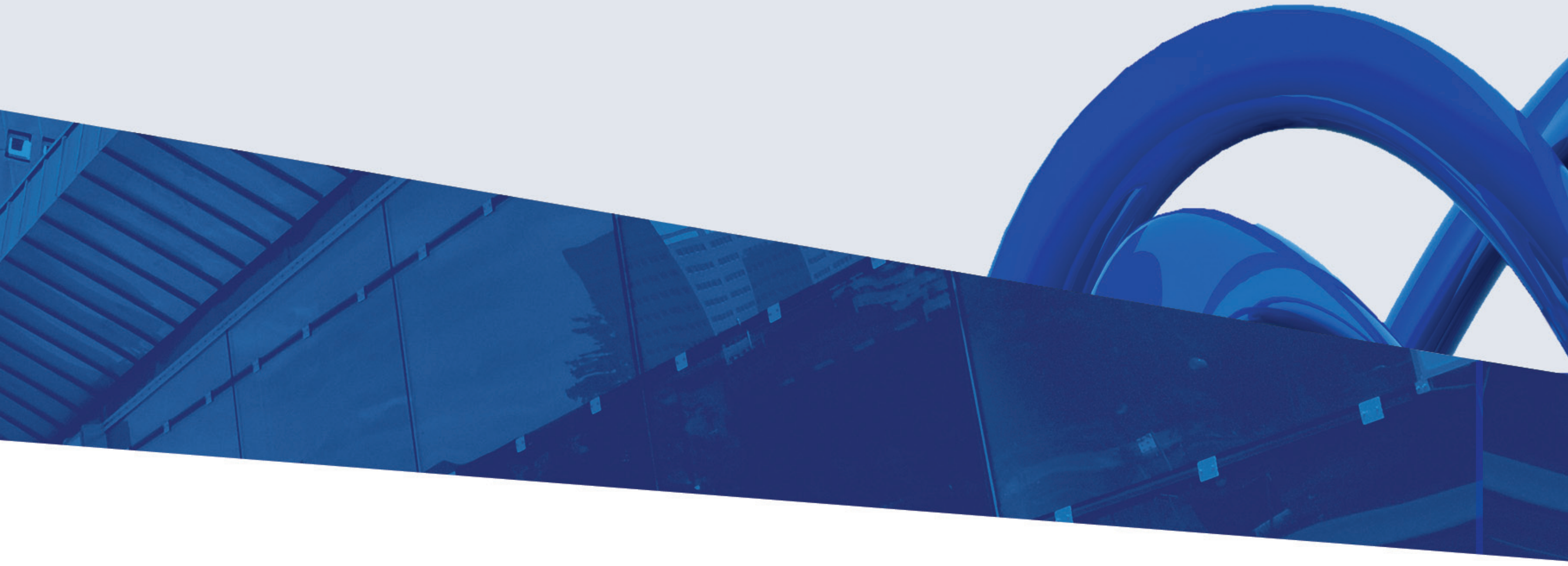
4



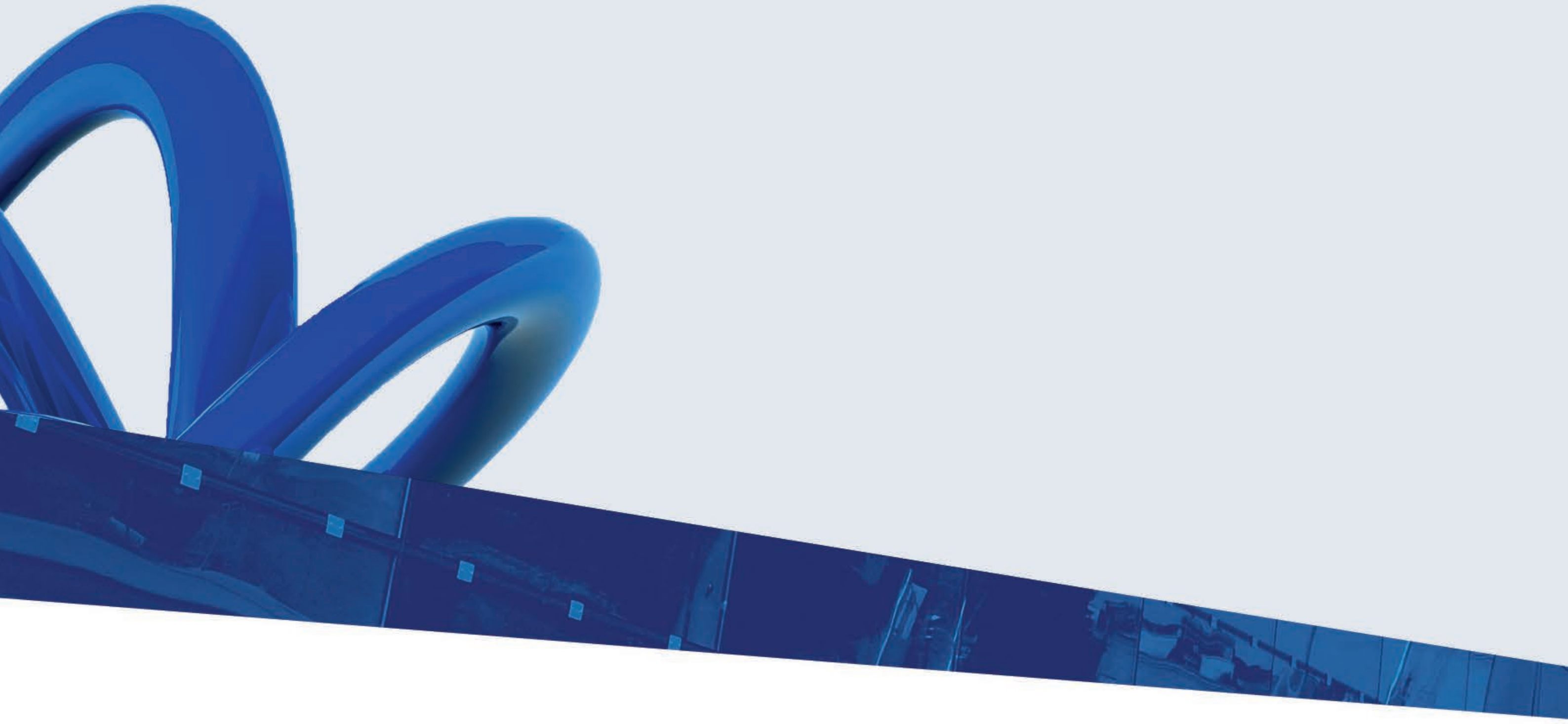
Chapter four is dedicated to solutions utilized in telecommunication access network infrastructure. The range of products covers the STANDARD KIT used in central offices, feeder cable storage chambers, telecom manholes and telecommunication poles where cable excess lengths are stored and feeder cables fibre splices are organised and protected.

The fibre optic closures are used for environmental protection and organisation of fibres and splices. The splices are arranged in specially designed trays. The range of offered splice protections includes fibre optic closures with built-in adapter plate enabling optical links cross connections. This kind of closures are widely applied in nowadays vastly developing PON access networks. The closures feature excellent environmental protection, a variety of cable port configurations, compact construction and possibility of installation in telecom chambers as well as on telecommunication poles.

For proper storage of optical fiber cable excess lengths, spare length cable racks and boxes are used. Our rich product offer enables selection of the products tailored to the installation site, desired capacity as well as the degree of stored cables protection. Spare length cable racks and boxes are intended for use in cable chambers, central offices, manholes and telecommunication poles.

In the following chapter, underground plastic pits can be found. They are used for storing spare cable lengths with a possibility of placing the splice closures inside them. They are used in places, where telecommunication pits do not exist, yet a solid connection of optical fibre cables and storage of appropriate spare length are required. The pits are designed and supplied by OPTOMER. They are designed to resist temporary loads of heavy vehicles. In addition they are cost effective and very easy to install.

FIBRE OPTIC CABLE STANDARD KIT



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FDN FIBRE OPTIC SPLICE CLOSURE 76
MUF-1 FIBRE OPTIC SPLICE CLOSURE 77
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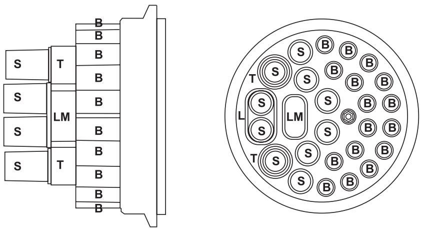
UFC FIBRE OPTIC SPLICE CLOSURE

OPTOCODE G1000

Fibre optic closure UFC



Entry configuration in the base

FEATURES:

- fibre optic closure used in underground and aerial networks
- up to 36 KSH or SMF splice trays
- max. 24 splices in SMF splice tray with min. fibre bending radius of 38 mm
- glass fibre reinforced, UV invulnerable plastic cap
- possibility of storing reserves of uncut, loose loops of feeder cable tubes
- environmentally sealed to the base with an “o” ring
- clamp enabling easy and multiple access to the interior of the closure
- environmental cable sealing with heatshrink sleeves or CABLELOK rubber cable sealings
- possibility of mounting the closure with OH-3 bracket
- using fibre manifolds R-06 enables proper fibre distribution to splice trays
- large capacity, up to 864 splices
- recommended cable retention frames:
  SZ-3 (wooden poles)
  SZ-2 (telecommunication pits)
  SZ-4 (cable chambers)

STANDARD KIT:

- splice enclosure
- KSH or SMF splice trays
- CABLELOK Cable Sealings or heatshrink sleeves - set
- brackets and tags

ACCESSORIES

- fibre manifold R-06
- OH-3 bracket
- additional CABLELOK Cable Sealings

TECHNICAL SPECIFICATIONS:

	UFC2770	UFC2844	UFC2845	UFC2846	UFC2847	UFC2848	UFC2794	UFC2868	UFC2869	UFC2870	UFC2871	UFC2872	UFC2834	UFC2835	UFC2836	UFC2840	UFC2841	UFC2842
port types	28 round (16xB, 2xT, 10xS) i 2 oval (1xL, 1xLM)																	
cable diameter range [mm]	4.8 - 36																	
number of splice trays	6	12	18	24	30	36	6	12	18	24	30	36	24	30	36	24	30	36
type/capacity of splice tray	KSH/12						KSH/12						SMF/24					
maximum number of splices	72	144	216	288	360	432	72	144	216	288	360	432	576	720	864	576	720	864
number of patching fields	-						-						-					
connector standard	-						-						-					
cable sealing	heatshrink						CABLELOK						heatshrink	CABLELOK				
dimensions height/diameter [mm]	400/ ø275	600/ ø275	750/ø275				400/ ø275	600/ ø275	750/ø275				750/ø275					
fixing	OH-3						OH-3						OH-3					
weight [kg]	6	7	8				6	7	8				8					
environmental IP protection	IP67						IP67						IP67					

KSH splice tray

SMF splice tray

ENTRY CONFIGURATION IN THE BASE:

port	number of ports	CABLELOK seal	cable diameter range [mm]	
			CABLELOK	heatshrink
L	1	L1, L2, L3	2 x 13.0 - 22.0	2 x 12.0 - 24.0
B	16	B1, B2, B4	4.8 - 16.5	6.0 - 19.0
T	2	T1, T2, T3	15.5 - 29.0	12.0 - 35.0
S	10	S6, S1, S5, S2, S3	5.0 - 20.0	12.0 - 26.0
LM	1	LM1, LM1A, LM2, LM2A	2 x 9.5 - 22.0	2 x 8.0 - 22.0

Detailed offer of Cablelock Cable Sealings on page 82.

ORDERING:

UFC2848- fibre optic splice closure with 36 KSH splice trays for 432 splices

TELEKOM ACCESS CATV MAN WAN LAN FTTx

**OPTOCODE
G1010**

FRBU FIBRE OPTIC SPLICE CLOSURE

FEATURES:

- fibre optic closure used in underground and aerial networks
- up to 6 Hellapon splice trays
- 12 (max. 16) splices in a splice tray
- plasitic cap ended glass fibre reinforced, UV invulnerable
- possibility of storing reserves of uncut, loose loops of feeder cable tubes
- environmentally sealed to the base with an “o” ring
- clamp enabling easy and multiple access to the interior of the closure
- environmental cable sealing with heatshrink sleeves or CABLELOK rubber cable sealings
- possibility of mounting the enclosure with OH-3 or ACC1037 bracket
- employed for cables of capacity of up to 72 fibers (max. 96)
- recommended cable retention frames:
  SZ-3 (wooden poles))
  SZ-2 (telecommunication pits)
  SZ-4 (cable chambers)

STANDARD KIT:

- splice enclosure
- Hellapon splice trays
- CABLELOK Cable Sealings or heatshrink sleeves - set
- brackets and tags

ACCESSORIES

- OH-1 or ACC1037 bracket

Fibre optic closure FRBU

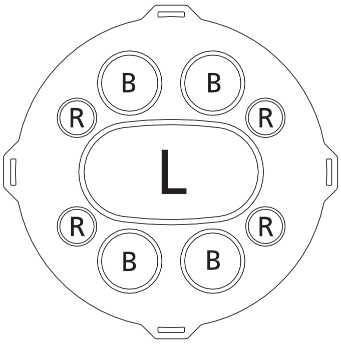
TECHNICAL SPECIFICATIONS:

	FRBU1313	FRBU1314	FRBU1315	FRBU1323	FRBU1324	FRBU1325
port types	1 oval (L), 8 round (4xB, 4xR)					
cable diameter range [mm]	4.8 - 24					
number of splice trays	2	4	6	2	4	6
type/capacity of splice tray	Hellapon/12 (maks. 16)					
maximum number of splices	24	48	72	24	48	72
number of patching fields	-					
connector standard	-					
cable sealing	heatshrink			CABLELOK		
dimensions height/diameter [mm]	435/ø130					
fixing	two OH-1 brackets					
weight [kg]	2					
environmental IP protection	IP67					

Detailed offer of Cablelock Cable Sealings on page 81.

ENTRY CONFIGURATION IN THE BASE:

port	number of ports	CABLELOK seal	cable diameter range [mm]	
			CABLELOK	heatshrink
L	1	L1, L2, L3	2 x 13.0 - 21.5	2 x 8.0 - 24.0
B	4	B1, B2, B4	4.8 - 16.5	6.0 - 18.0
R	4	R8, R7, R9, R5, R1, R2, R3	1.7 - 9.5	4.0 - 11.0



*Entry configuration
in the base*

ORDERING:

FBRU1313 - fibre optic splice closure with 2 splice trays for 24 splices

TELEKOM CATV MAN WAN LAN FTTx Industry

FDN FIBRE OPTIC SPLICE CLOSURE

OPTOCODE G1020

Fibre closure FDN

FEATURES:

- fibre optic closure used in underground and aerial networks
- enables mounting up to 12 KSH or SMF splice trays
- max. 24 splices in SMF splice tray with min. fiber bending radius of 38 mm
- glass fibre reinforced, UV invurnelable plastic cap
- possibility of storing reserves of uncut, loose loops of feeder cable tubes
- clamp enabling easy and multiple access to the interior of the closure
- environmentally sealed to the base with an "o" ring
- environmental cable sealing with heatshrink sleeves (not for R type ports) or CABLELOK rubber cable sealings
- possibility of mounting the closure with OH-3 bracket
- large number of entries in the base
- recommended cable retention frames:
  SZ-3 (wooden poles)
  SZ-2 (telecommunication pits)
  SZ-4 (cable chambers)

STANDARD KIT:

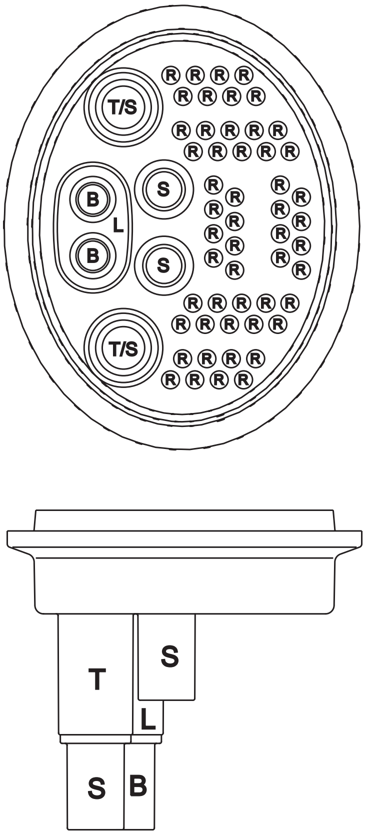
- splice enclosure
- KSH or SMF splice trays
- CABLELOK Cable Sealings or heatshrink sleeves - set
- brackets and tags

ACCESSORIES

- OH-3 bracket

TECHNICAL SPECIFICATIONS:

	FDN3583	FDN3584	FDN3585	FDN3586
port types	1 oval (L), 60 round (52xR, 4xS, 2xT, 2xB)			
cable diameter range [mm]	1.7 - 35			
number of splice trays	12			
type/capacity of splice tray	KSH/12		SMF/24	
max. number of splices	144	144	288	288
number of patching fields	-			
connector standard	-			
cable sealing	CABLELOK	CABLELOK, heatshrink	CABLELOK	CABLELOK, heatshrink
dimensions length/width/height [mm]	455/312/222			
fixing	OH-3			
weight [kg]	4.2			
environmental IP protection	IP67			



Entry configuration in the base

ENTRY CONFIGURATION IN THE BASE:

port	number of ports	CABLELOK seal	cable diameter range [mm]	
			CABLELOK	heatshrink
L	1	L1, L2, L3	2 x 13.0 - 22.0	2 x 12.0 - 24.0
B	2	B1, B2, B4	4.8 - 16.5	6.0 - 19.0
T	2	T1, T2, T3	15.5 - 29.0	12.0 - 35.0
S	4	S6, S1, S5, S2, S3	5.0 - 20.0	12.0 - 26.0
R	52	R8, R7, R9, R5, R1, R2, R3	1.7 - 9.5	-

ORDERING:

FDN3883 - fibre optic splice closure with 12 splice trays for 144 splices

TELEKOM CATV MAN WAN LAN FTTx Industry

OPTOCODE G1030

MUF-1 FIBRE OPTIC SPLICE CLOSURE

FEATURES:

- fibre optic closure used in underground and aerial networks
- up to 6 KS-3E splice trays
- maximum 24 splices in a splice tray
- glass fibre reinforced, UV invurnelable plastic cap
- environmentally sealed to the base with an “o” ring and a set of clamping screws
- possibility of using metal bushings accepting polyvinyl jacketed and OPGW (ground wire) cables
- environmental cable sealing with heatshrink sleeves on metal bushings
- employed for cables of capacity of up to 144 fibres
- possibility of mounting the closure with OH-3 bracket or WS-1 cantilever and OH-2 brackets
- in case of pylons, OH-3 mounting bracket is recommended
- recommended cable retention frames:
  SZ-3 (wooden poles)
  SZ-2 (telecommunication pits)
  SZ-4 (cable chambers)

MUF-1 Closure

STANDARD KIT:

- splice closure
- KS-3E splice trays
- brackets, allen wrench, sillica gel
- two ADSS cable glands
- heatshrink sleeves

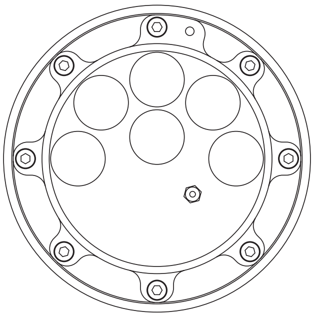
ACCESSORIES

- cable gland OPGW-2
- WS-1 cantilever with OH-2 brackets
- OH-3 bracket

ATTENTION: Installation of additional drop cables does not require dismantling already installed cable ports

TECHNICAL SPECIFICATIONS:

	MUF-1/24	MUF-1/48	MUF-1/72	MUF-1/96	MUF-1/120	MUF-1/144
port types	6 round					
cable diameter range [mm]	polyvinyl cable: 10-18, OPGW cable: 12-20					
number of splice trays	1	2	3	4	5	6
type/capacity of splice tray	KS-3E/24					
max. number of splices	24	48	72	96	120	144
number of patching fields	-					
connector type	-					
Cable sealing	heatshrink					
dimensions height/diameter [mm]]	460 (510 with cable entries)/ø215					
fixing	2 fixing brackets OH-2, or OH-3					
weight [kg]	5					
environmental IP protection	IP67					



Entry configuration in the base

ORDERING:

MUF-1/48 - fibre optic closure with 2 splice trays for 48 splices

TELEKOM MAN WAN FTTx Industry OPGW

MUF-2 FIBRE OPTIC SPLICE CLOSURE

OPTOCODE G1050

MUF-2 Cross-connect fibre optic splice closure

FEATURES:

- fibre optic closure used in underground and aerial networks
- up to 4 KS-3E splice trays
- maximum 24 splices in a splice tray
- glass fibre reinforced, UV invurnelable plastic cap
- adapter plates for 24 E-2000, SC connectors or 48 for LC connectors
- environmentally sealed to the base with an “o” ring and a set of clamping screws
- possibility of using metal bushings acepting polyvinyl jacketed and OPGW (ground wire) cables
- environmental cable sealing with heatshrink sleeves on metal bushings
- employed for cables of capacity of up to 144 fibres
- possibility of mounting the closure with OH-3 bracket or WS-1 cantilever and OH-2 brackets
- in case of pylons, OH-3 mounting bracket is recommended
- recommended cable retention frames:
  SZ-3 (wooden poles)
  SZ-2 (telecommunication pits)
  SZ-4 (cable chambers)

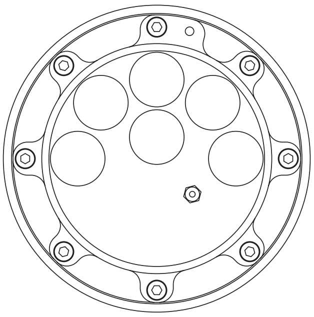
STANDARD KIT:

- splice closure
- KS-3E splice trays
- brackets, allen wrench, sillica gel
- two ADSS cable glands
- heatshrink sleeves

ACCESSORIES

- cable glands OPGW-2
- WS-1 cantilever with OH-2 brackets
- OH-3 brackets
- adapters and pigtails

ATTENTION: Installation of additional drop cables does not require dismantling already installed cable ports



Entry configuration in the base

TECHNICAL SPECIFICATIONS:

	MUF-2/24	
port types	6 round	
cable diameter range [mm]	polyvinyl cable: 10-18, OPGW cable: 12-20	
number of splice trays	2	
type/capacity of splice tray	KS-3E/24	
maximum number of splices	48	
number of patching fields	24	48
connector standard	E-2000, SC	LC
cable sealing	heatshrink	
dimensions height/diameter [mm]	460 (510 with entries)/ø215	
fixing	2 fixing brackets OH-2, or OH-3	
weight [kg]	6	
environmental IP protection	IP67	

ORDERING:

MUF-24 - fibre optic splice closure for 24 splices and cross-connects

TELEKOM ACCESS CATV MAN WAN LAN Industryl OPGW

OPTOCODE G1060

MUF-3 FIBRE OPTIC SPLICE CLOSURE

MUF-3 Cross-connect fibre optic splice closure

FEATURES:

- cross-connect fibre optic closure used in underground and aerial networks
- up to 36 KSH splice trays
- maximum 24 splices in a splice tray with min. fiber bending radius of 38 mm
- UV invurnelable plastic cap
- adapter plates for 72 FC, ST, SC connectors or 96 E-2000, SC connectors or 144 LC connectors
- possibility of storing reserves of uncut, loose loops of feeder cable tubes
- environmentally sealed to the base with an “o” ring
- clamp enabling easy and multiple access to the interior of the closure
- environmental cable sealing with heatshrink sleeves or CABLELOK rubber cable sealings
- possibility of mounting the closure with OH-3 bracket
- using fiber manifolds R-06 enables proper fiber distribution to splice trays
- large capacity - max. 192 splices
- recommended cable retention frames:
  SZ-3 (wooden poles)
  SZ-2 (telecommunication pits)
  SZ-4 (cable chambers)

STANDARD KIT:

- splice enclosure
- KS-3E splice trays
- CABLELOK rubber Cable Sealings or heatshrink sleeves
- bands and tags

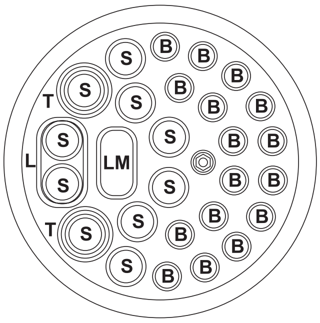
ADDITIONAL EQIPMENT:

- fiber manifold R-06
- OH-3 bracket
- adapters and pigtails

TECHNICAL SPECIFICATIONS:

	MUF-3/72		MUF-3/96	
port types	28 round (16xB, 2xT, 10xS) and 2 oval (1xL, 1xLM)			
cable diameter range [mm]	polyvinyl cable: 3.8-29			
number of splice trays	6x KS-3E or 12x KSH		8x KS-3E or 16x KSH	
type/capacity of splice tray	KSH/12, KS-3E/24			
max. number of splices	144		192	
number of patching fields	72	144		96
connector standard	FC, ST, SC	LC		E2000, SC
cable sealing	CABLELOK, heatshrink			
dimensions height/diameter [mm]	760 including cable entries/ø254 mm			
fixing	OH-3			
weight [kg]	7		8	
environmental IP protection	IP67			

ENTRY CONFIGURATION IN THE BASE:



Entry configuration in the base

port	number of ports	CABLELOK seal	cable diameter range [mm]	
			CABLELOK	heatshrink
L	1	L1, L2, L3	2 x 13.0 - 22.0	2 x 12.0 - 24.0
B	16	B1, B2, B4	4.8 - 16.5	6.0 - 19.0
T	2	T1, T2, T3	15.5 - 29.0	8.0 - 35.0
S	10	S6, S1, S5, S2, S3	5.0 - 20.0	12.0 - 26.0
LM	1	LM1, LM1A, LM2, LM2A	2 x 9.5 - 22.0	2 x 8.0 - 22.0

ORDERING:

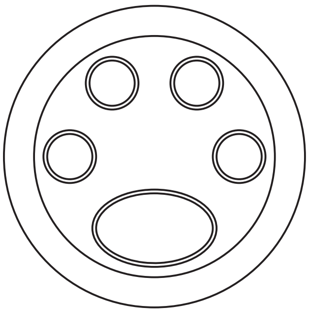
MUF-3/96 - fibre optic closure for 192 splices and 96 cross-connects

TELEKOM ACCESS CATV MAN WAN LAN FTTx Industry

MUF-4 FIBRE OPTIC SPLICE CLOSURE

OPTOCODE G1070

Fibre Optic Enclosure MUF-4



Entry configuration in the base

FEATURES:

- cross-connect fibre optic closure used in underground and aerial networks
- up to 4 dedicated splice trays
- 12 splice slots per tray (up to 24 splices per tray if stacked)
- UV invulnerable plastic cap
- possibility of storing reserves of uncut, loose loops of feeder cable tubes
- hermetic environmental sealing
- clamp enabling easy and multiple access to the interior of the closure
- environmental cable sealing with heatshrink sleeves
- possibility of mounting the closure with included brackets
- used for cables with capacity of up to 96 fibres
- recommended cable retention frames:
  SZ-3 (wooden poles)
  SZ-2 (telecommunication pits)
  SZ-4 (cable chambers)

STANDARD KIT:

- splice enclosure
- dedicated splice trays
- heatshrink sealings
- transport tubess, tags
- mounting kit

TECHNICAL SPECIFICATIONS:

	MUF-4/12	MUF-4/24	MUF-4/36	MUF-4/48	MUF-4/72	MUF-4/96
port types	4 round + 1 oval					
cable diameter range [mm]	7-18					
number of splice trays	1	2	3	4	3	4
type/capacity of splice tray	dedicated splice tray/12 (max. 24 stacked)					
max. number of splices	12	24	36	48	72	96
number of patching fields	-					
connector standard	-					
cable sealing	heatshrink					
dimensions height/diameter [mm]	440/ø210					
fixing	dedicated brackets for mouting on walls or poles					
weight [kg]	5					
environmental IP protection	IP67					

ORDERING:

MUF-4/72 - fibre optic closure for 72 splices

TELEKOM CATV MAN WAN LAN FTTx PON Industry

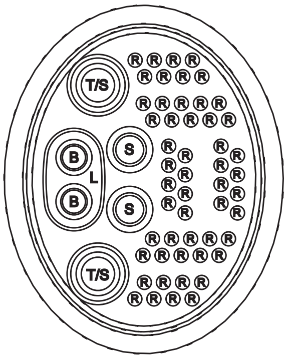
SPLICE CLOSURES AND CONNECTION SHEATS - SUMMARY

	port types	cable diameter range [mm]	number of splice trays	type/capacity of splice tray	max. number of splices	cable sealing	dimensions height/diameter or length/width/heigth [mm]	fixing remarks	OPTOCODE
UFC2770	28 round (16xB, 2xT, 10xS) and 2 oval (1xL, 1xLM)	4.8 - 36	6	KSH/12	72	heatshrink	400/ø275	OH-3	G1000
UFC2844	29 round (16xB, 2xT, 10xS) and 2 oval (1xL, 1xLM)		12		144		600/ø275		
UFC2845	30 round (16xB, 2xT, 10xS) and 2 oval (1xL, 1xLM)		18		216		750/ø275		
UFC2846	31 round (16xB, 2xT, 10xS) and 2 oval (1xL, 1xLM)		24		288		750/ø275		
UFC2847	32 round (16xB, 2xT, 10xS) and 2 oval (1xL, 1xLM)		30		360		750/ø275		
UFC2848	33 round (16xB, 2xT, 10xS) and 2 oval (1xL, 1xLM)		36		432		750/ø275		
UFC2794	34 round (16xB, 2xT, 10xS) and 2 oval (1xL, 1xLM)		6		72	CABLELOK	400/ø275	OH-3	G1000
UFC2868	35 round (16xB, 2xT, 10xS) and 2 oval (1xL, 1xLM)		12		144		600/ø275		
UFC2869	36 round (16xB, 2xT, 10xS) and 2 oval (1xL, 1xLM)		18		216		750/ø275		
UFC2870	37 round (16xB, 2xT, 10xS) and 2 oval (1xL, 1xLM)		24		288		750/ø275		
UFC2871	38 round (16xB, 2xT, 10xS) and 2 oval (1xL, 1xLM)		30		360		750/ø275		
UFC2872	39 round (16xB, 2xT, 10xS) and 2 oval (1xL, 1xLM)		36		432		750/ø275		
UFC2834	40 round (16xB, 2xT, 10xS) and 2 oval (1xL, 1xLM)		24	SMF/24	576	heatshrink	750/ø275	OH-3	G1000
UFC2835	41 round (16xB, 2xT, 10xS) and 2 oval (1xL, 1xLM)		30		720	CABLELOK	751/ø275		
UFC2836	42 round (16xB, 2xT, 10xS) and 2 oval (1xL, 1xLM)		36		864		752/ø275		
UFC2840	43 round (16xB, 2xT, 10xS) and 2 oval (1xL, 1xLM)		24		576		753/ø275		
UFC2841	44 round (16xB, 2xT, 10xS) and 2 oval (1xL, 1xLM)		30		720		754/ø275		
UFC2842	45 round (16xB, 2xT, 10xS) and 2 oval (1xL, 1xLM)		36		864		755/ø275		
FRBU1313	1 oval (L), 8 round (4xB, 4xR)	4.8 - 24	2	Hellapon/12 (maks.16)	24	heatshrink	435/ø130	2xOH-1	G1010
FRBU1314	1 oval (L), 8 round (4xB, 4xR)		4		48		435/ø130		
FRBU1315	1 oval (L), 8 round (4xB, 4xR)		6		72		435/ø130		
FRBU1323	1 oval (L), 8 round (4xB, 4xR)		2		24	CABLELOK	435/ø130		
FRBU1324	1 oval (L), 8 round (4xB, 4xR)		4		48		435/ø130		
FRBU1325	1 oval (L), 8 round (4xB, 4xR)		6		72		435/ø130		
FDN3583	1 oval (L), 60 round (52xR, 4xS, 2xT, 2xB)	1.7 - 35	12	KSH/12	144	CABLELOK	455/312/222	OH-3	G1020
FDN3584	1 oval (L), 60 round (52xR, 4xS, 2xT, 2xB)		12		144	CABLELOK heatshrink	456/312/222		
FDN3585	1 oval (L), 60 round (52xR, 4xS, 2xT, 2xB)		12	SMF/24	288	CABLELOK	457/312/222		
FDN3586	1 oval (L), 60 round (52xR, 4xS, 2xT, 2xB)		12		288	CABLELOK heatshrink	458/312/222		
MUF-1/24	6 round	10-18, OPGW cable: 9-20	1	KS-3E/24	24	heatshrink	460/ø215	2xOH-2 or OH-3	G1030
MUF-1/48	6 round	10-18, OPGW cable: 9-21	2		48		461/ø215		
MUF-1/72	6 round	10-18, OPGW cable: 9-22	3		72		462/ø215		
MUF-1/96	6 round	10-18, OPGW cable: 9-23	4		96		463/ø215		
MUF-1/120	6 round	10-18, OPGW cable: 9-24	5		120		464/ø215		
MUF-1/144	6 round	10-18, OPGW cable: 9-25	6		144		465/ø215		
MUF-2/24	6 round	10-18, OPGW cable: 9-20*	2		48	heatshrink	460/ø215	2xOH-2 or OH-3, patching 24xE-2000, SC	G1050
MUF-2/24	6 round						460/ø215	2xOH-2 or OH-3, patching 48xLC	
MUF-3/72	28 round (16xB, 2xT, 10xS) and 2 oval (1xL, 1xLM)	3,8-29	6/12	KSH/12, KS-3E/24	144	CABLELOK heatshrink	760/ø 254	OH-3, patching 72xFC, ST, SC	G1060
MUF-3/72	28 round (16xB, 2xT, 10xS) and 2 oval (1xL, 1xLM)	3,8-30	6/12				760/ø 254	OH-3, patching 144xLC	
MUF-3/96	28 round (16xB, 2xT, 10xS) and 2 oval (1xL, 1xLM)	3,8-31	6/12		192				
MUF-3/96	28 round (16xB, 2xT, 10xS) and 2 oval (1xL, 1xLM)	3,8-32	6/12				760/ø 254	OH-3, patching 96xE-2000, SC	
MUF-4/12	4 round + 1 oval	7-18	1	splice tray/12 (maks. 24)	12	heatshrink	440/ø210	dedicated brackets	G1070
MUF-4/24	4 round + 1 oval		2		24		440/ø210		
MUF-4/36	4 round + 1 oval		3		36		440/ø210		
MUF-4/48	4 round + 1 oval		4		48		440/ø210		
MUF-4/72	4 round + 1 oval		3		72		440/ø210		
MUF-4/96	4 round + 1 oval		4		96		440/ø210		

NON-HEATSHRINK CABLE SEAL CABLELOK

OPTOCODE G1080

CABLELOK Cable Seal



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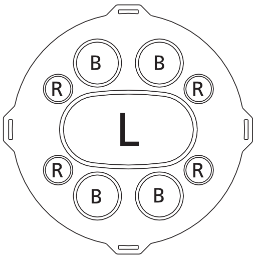
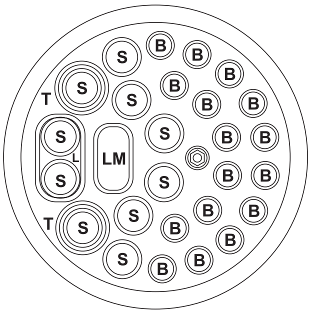


FRBU



UFC
MUF-3

FEATURES:

- excellent sealing properties to 6 m head of water
- rapid and consistent installation - 2 minutes in comparison with heatshrink 20 minutes
- no heat required for installation eliminating the possibility of cable damage
- mounting possible under tight packing conditions
- 25 years warranty for installed seals
- used for the environmental sealing of cable entering a Hellermann jointing enclosure
- manufactured from a grade of flexible neoprene rubber, resistant to external environmental conditions
- sealing is achieved by a number of internal lips seals which are compressed onto the cable during installation
- a range of sizes for individual types are given in the table below

SELECTION METHOD OF CABLELOK SEALING FOR ENTRIES IN JUNCTION SHEATHS:

cable port		part number	cable diameter range [mm]	pack size
R	R8	CABLELOK 3755	1.7 - 2.0	50
	R7	CABLELOK 3598	2x1.7 - 2.0	
	R9	CABLELOK 3873	3.0 - 3.8	
	R5	CABLELOK 1078	2x3.8 - 4.8	
	R1	CABLELOK 1080	3.8 - 5.2	
	R2	CABLELOK 1081	5.2 - 8.0	
	R3	CABLELOK 1082	8.0 - 9.5	
	R4	CABLELOK 1083	port plug	
B	B4	CABLELOK 2952	4.8 - 9.0	25
	B1	CABLELOK 1084	8.0 - 14.0	
	B2	CABLELOK 1085	13.0 - 16.5	
	B3	CABLELOK 1086	port plug	
S	S6	CABLELOK 3874	5.0 - 8.5	20
	S1	CABLELOK 1969	8.0 - 12.0	
	S5	CABLELOK 3601	2x10.0 - 11.5	
	S2	CABLELOK 1970	12.0 - 16.0	
	S3	CABLELOK 1971	16.0 - 20.0	
	S4	CABLELOK 1972	port plug	
LM	LM1	CABLELOK 1960	2x9.5 - 11.5	15
	LM1A	CABLELOK 3607	2x12.0 - 14.5	
	LM2	CABLELOK 1961	2x17.5 - 18.5	
	LM2A	CABLELOK 3609	2x18.5 - 22.0	
	LM3	CABLELOK 1962	port plug	
L	L1	CABLELOK 1087	2x13.0 - 14.5	10
	L2	CABLELOK 1088	2x16.5 - 18.0	
	L3	CABLELOK 1079	2x20.0 - 21.5	
T	T5	CABLELOK 3602	15.5 - 22.0	10
	T1	CABLELOK 3603	20.5 - 23.5	
	T2	CABLELOK 3604	23.5 - 25.5	
	T3	CABLELOK 3605	24.5 - 29.0	
	T4	CABLELOK 3606	port plug	

ORDERING:

B1- cable seal CABLELOK for cables of 9.0-14.0 mm diameter

TELEKOM ACCESS CATV MAN WAN LAN FTTx PON xWDM Industry

**OPTOCODE
G1090**

CABLE GLAND OPGW-2

FEATURES:

- the cable gland is intended for use in OPGW ground cable closure, employed in power lines
- application in fibre closures MUF-1, MUF-2
- cable is fixed between two parts of the gland tightened with two screws
- made for cables of diameter from 9.0 to 20.0 mm
- made of duralumin and brass
- dimensions: length 92 mm diameter 37 mm

OPGW-2 Cable Gland

STANDARD KIT:

- cable gland
- heatshrink sleeve

TECHNICAL SPECIFICATIONS:

	OPGW-2/12	OPGW-2/13	OPGW-2/14	OPGW-2/15	OPGW-2/16	OPGW-2/17	OPGW-2/18	OPGW-2/20
cable diameter range [mm]]	9.0 - 12.5	10.5 - 13.5	12.0 - 14.0	14.1 - 15.0	15.1 - 16.0	16.1 - 17.0	17.1 - 18.0	18.1 - 20.0

ORDERING:

OPGW-2/14 - cable gland for cable diameter from 12 to 14 mm

**OPTOCODE
G1110**

ADSS CABLE GLAND

FEATURES:

- intended for use for feeder cables, underground and overhead
- application in fiber closures MUF-1, MUF-2
- the cables are fixed with heatshrink sleevings and cable strength member
- made of duralumin and brass
- dimensions: length 114 mm, diameter 37 mm
- range of cable diameter: up to 18 mm

ADSS Cable gland

STANDARD KIT:

- cable gland
- heatshrink sleeve

ORDERING:

ADSS - cable gland

TELEKOM CATV MAN WAN Inustry

BRACKETS AND CLASPS

**OPTOCODE
G1110**

OH-1

OH-2

OH-3

WS-1

ACC 1037

Bracket OH-1

- enables mounting FRBU enclosure
- for mounting a closure, two OH-1 brackets are needed
- metal crimping tie
- base made of epoxy powder coated, zinc plated steel sheet

Bracket OH-2

- enables mounting enclosures MUF-1, MUF-2
- for mounting an closure, two OH-2 brackets are needed
- enables mounting on walls or WS-1 cantilevers
- zinc plated, epoxy powder coated steel bracket

Bracket OH-3

- enables mounting enclosures UFC, MUF-1, MUF-2, MUF-3 and FDN
- for mounting a closure, one OH-3 bracket is needed
- enables mounting on walls or WS-1 cantilevers
- made of aluminium alloy, epoxy powder coated
- supporting c-shaped bars (for mounting on pylons) - steel, zinc plated
- plastic or metal cable ties
- enables mounting on pylons

Plastic bracket ACC 1037

- enables mounting FRBU closure
- for mounting a closure, one ACC1037 bracket is needed
- made of plastic
- possibility of fixing the closure in positions perpendicular to one another

Cantilever WS-1

- application in fiber closures MUF-1, MUF-2
- made of aluminium or blaze zinc steel
- STANDARD KIT a bracket for setting the whole system on the pole
- an accessory for OH-2 bracket

STANDARD KIT:

- bracket/clasp
- mounting kit

TECHNICAL SPECIFICATIONS:

	OH-1	OH-2	OH-3	ACC 1037
application	FRBU	MUF-1, MUF-2	UFC, MUF-1, MUF-2,MUF-3, FDN	FRBU
bracket diameter [mm]	115-130	160	260	100
pole mounting	2 holes ø8	2 holes ø9	5 holes ø10	2 holes ø5
holes span [mm]	175	240	90	78
base [mm]	30x205	30x275	45x400	58x100

	WS-1/150	WS-1/200	WS-1/300
dimensions [mm]	650/150		
pole diameter [mm]	150	200	300
fixing	2x2 holes ø9 mm		

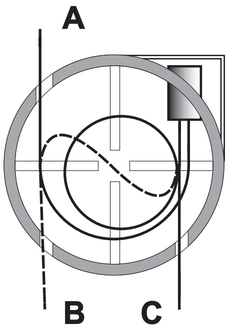
ORDERING:

OH-1 -optical fibre splice closure bracket

TELEKOM ACCESS CATV MAN WAN LAN FTTx PON xWDM Industry OPGW

OPTOCODE G1160

UNDERGROUND PLASTIC PIT ZK-1



ZK-1 - Underground plastic pit

FEATURES:

- enables storage of up to 200 m spare optical fibre cable
- used in places of cable incision/failure as a repair kit - underground plastic pit + splice closure
- case - corpus made of HDPE
- guarantees to withstand short-time external loads of up to 3000 N and high mechanical resistance
- place with handles for optical fibre splice closure of diameter up to 180 mm and length 450 mm
- making „8 shape” with cable, enables cable repairment without the need to replace pipes
- possibility of installing an uncut cable
- unused holes in the underground plastic pits covered with blank plates or plugs and sealed with soft silicon
- feeder cables enter the ZK-1 pit in 32 to 40 mm diameter polyethylene HDPE cable protection pipes
- the underground plastic pit enables making additional entries for cable outputs

STANDARD KIT:

- underground plastic pit corpus (case?)
- lid
- port plugs
- cable ties
- lid-blocking screws

ACCESSORIES

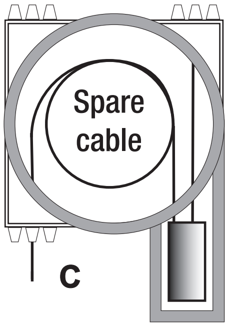
- fiber enclosures FBRU, MUF-1, MUF-2, FOSC 400A, OZKS
- cable tags OZ-1 or OZ-2

ORDERING:

ZK-1 underground plastic pit

OPTOCODE G1165

UNDERGROUND PLASTIC PIT ZK-3



ZK-3 Underground plastic pit

FEATURES:

- enables storage of up to 300 m spare optical fibre cable
- used in places of cable incision/failure as a repair kit - underground plastic pit + splice closure
- case - corpus made of HDPE
- guarantees to withstand short-time external loads of up to 3000 N and high mechanical resistance
- place with handles for optical fibre splice closure of diameter up to 180 mm and length 450 mm
- possibility of installing an uncut cable
- feeder cables enter the ZK-1 pit in 32 to 40 mm diameter polyethylene HDPE cable protection pipes
- entry holes are cut out and secured with rubber seals

STANDARD KIT:

- underground plastic pit corpus (case?)
- lid with a seal
- cable ties
- lid-blocking screws
- pipe seal of 40 mm diameter

ACCESSORIES

- fiber enclosures FBRU, MUF-1, MUF-2, FOSC 400A (B and D), OZKS
- cable tags OZ-1 or OZ-2
- watertight seal for tubes of 32 mm diameter

TECHNICAL SPECIFICATIONS:

	ZK-1	ZK-3
number of ports	3	3 to be cut out
quantity of protective pipes ø40mm	9	9 to be cut out
max. spare cable capacity ø10mm [m]	200	300
max. spare cable capacity ø18mm [m]	50	100
dimensions: diameter/depth [mm]	800/400	800/560
enclosure diameter max [mm]	180	220
weight [kg]	20 (lid: 8)	23.5 (lid: 6.5)

ORDERING:

ZK-3 - Underground plastic pit with closure sleeve

TELEKOM ACCESS CATV MAN WAN LAN FTTx

SZ-1, SZ-1.2, SZ-1.3 SPARE LENGTH CABLE BOXES

OPTOCODE G1170

SZ-1, SZ-1.2 Cable spare length box

FEATURES:

- designed to be installed in the outdoor cable chambers
- protects the cable against external mechanical damage
- guarantees functionality and proper bending radius of a cable
- consists of a casing, inbound metal rack and a lid
- interior access protected by a lock
- easy disassembly of the rack from the box
- has 8 (6 in case of SZ-1.2) cable outputs with special rubbed gasketed entries
- box made of sheet painted with the powder varnish with the colour RAL-7035
- available in special aluminium version SZ-1AL and SZ-1.2AL

STANDARD KIT:

- spare length cable box
- rubbed gasketed entries
- mounting kit
- locks

TECHNICAL SPECIFICATIONS:

		SZ-1	SZ-1.2	SZ-1.3
fixing		4x ø7 mm 530x530 mm		4x ø7 mm 630x630 mm
number of inputs/outputs of a cable		8		
dimensions width/height/depth [mm]		750/750/150	750/750/250	860/860/215
weight [kg]		16	20	22
cable capacity [m]	cable ø10 mm	150	250	350
	cable ø11 mm	130	200	300
	cable ø12 mm	100	180	250
	cable ø13 mm	80	150	200
	cable ø14 mm	60	120	180
	cable ø16 mm	30	50	50
	cable ø18 mm	-	-	50
interior access protection		lock	lock	lock
housing material/color		steel or aluminium/RAL7035		steel/RAL 7035

ORDERING:

SZ-1 Cable Spare Length Box

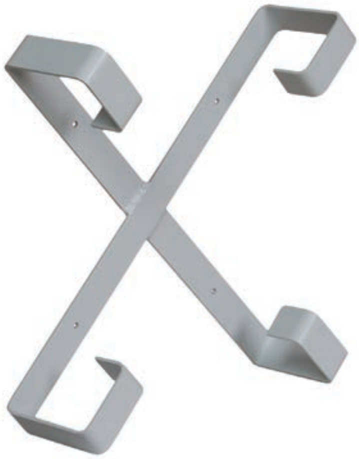
TELEKOM ACCESS CATV MAN WAN LAN FTTx PON xWDM Industry

OPTOCODE
G1180

SZ-2, SZ-2.2, SZ-2.3 CABLE SPARE LENGTH FRAMES

FEATURES:

- designed to be installed in the telecommunication pits or in cable chambers
- guarantees functionality and proper bending radius of a cable
- the rack arranges the layout of the cables
- enables for safe storing spare feeder cable of different diamters
- SZ-2 made of aluminium
- SZ-2.2 made of stainless steel sheet - for two cables
- SZ-2.3 made of steel sheet coated with anticorrosion layer- regulated arm base
- frame painted with the powder varnish with the colour RAL-7035



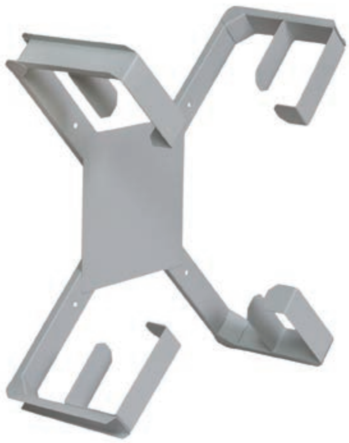
Cable spare length frame SZ-2

STANDARD KIT:

- cable spare length frame
- cable ties
- mounting kit

TECHNICAL SPECIFICATIONS:

		SZ-2	SZ-2.2	SZ-2.3
fixing		4x ø6.5 mm 280x280 mm	4x ø8 mm 300x300 mm	4x ø8 mm 500x500 mm
number of inputs / outputs of cable		-	-	-
dimensions width/height/depth [mm]		550/550/95	600/600/160	880/880/160
weight [kg]		0.9	1.7	4.4
cable capacity [m]	cable ø10 mm	50	100	200
	cable ø11 mm	50	80	180
	cable ø12 mm	40	80	170
	cable ø13 mm	30	70	160
	cable ø14 mm	30	70	150
	cable ø16 mm	-	-	120
	cable ø18 mm	-	-	100
interior access protection		-	-	-
housing material/color		aluminium/RAL 7035	acid resistant steel/ RAL 7035	steel/RAL 7035

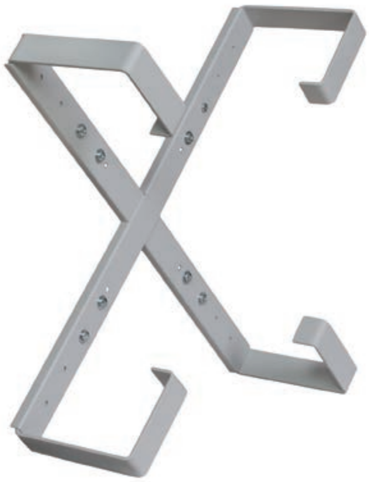


Cable spare length frame SZ-2.2

ORDERING:

SZ-2 outdoor cable spare length frame

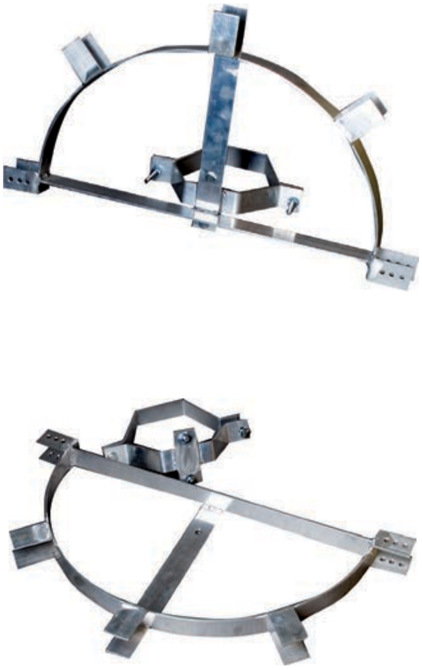
TELEKOM ACCESS CATV MAN WAN LAN FTTx PON xWDM Industry



Cable spare length frame SZ-2.3

SZ-3 FIBRE OPTIC CABLE FRAME

OPTOCODE G1190



Fibre optic cable frame SZ-3

FEATURES:

- intended for use on telecommunication poles
- guarantees functionality and proper bending radius of a cable
- accommodates and arranges excess cable
- can be streched to increase capacity
- minimal reserve of 70 m, under maximal arches strech for cable of 10 mm diameter
- made of aluminium
- corrosive resistance for the whole exploatation period
- fixed on a pole with brackets

STANDARD KIT:

- fibre optic cable frame
- clamping rings

ACCESSORIES

- WS-1 cantilever

TECHNICAL SPECIFICATIONS:

		SZ-3/150	SZ-3/200	SZ-3/300
fixing		ø150 mm pole	ø200 mm pole	ø 300 mm pole
number of inputs / outputs of cable		-		
dimensions width/height/depth [mm]		2 arches of 300 radius		
weight [kg]		22		
cable capacity [m]	cable ø10 mm	80	80	80
	cable ø11 mm	70	70	70
	cable ø12 mm	60	60	60
	cable ø13 mm	50		
	cable ø14 mm	40	40	40
	cable ø16 mm	20	20	20
	cable ø18 mm	20	20	20
interior access protection		-	-	-
housing material/color		aluminium		

ORDERING:

SZ-3 - fibre optic cable frame

TELEKOM ACCESS CATV MAN WAN LAN FTTx PON xWDM Industry

OPTOCODE G1200

SZ-4, SZ-4.2 SPARE LENGTH CABLE BOX

FEATURES:

- designated for installation in cable chambers
- interior access is protected with a lid, in SZ-4.2 lockable
- capacity from 20 up to 50 m of cable, for diameters 13 and 10 mm
- guarantees functionality and proper bending radius of a cable
- forces the cable arrangement

STANDARD KIT:

- spare length cable box
- mounting kit
- lock (SZ-4.2)

TECHNICAL SPECIFICATIONS:

		SZ-4	SZ-4.2
fixing		4x ø6,5 mm 280x280 mm	
number of inputs / outputs of cable		4	4
dimensions width/height/depth [mm]		550/550/100	750/750/150
weight [kg]		6,5	12
cable capacity [m]	cable ø10 mm	50	150
	cable ø11 mm	50	120
	cable ø12 mm	40	100
	cable ø13 mm	30	80
	cable ø14 mm	30	70
	cable ø16 mm	20	30
	cable ø18 mm	20	30
interior access protection		-	lock
housing material/color		steel/RAL 7035	

Spare Length Cable Box SZ-4, SZ-4.2

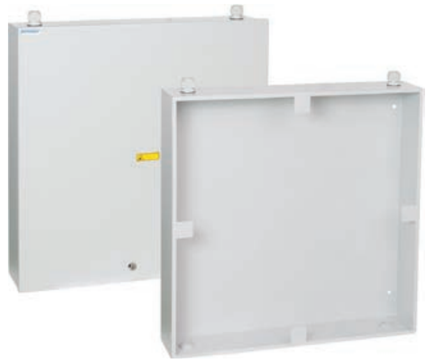
SPOSÓB ZAMAWIANIA:

SZ-4 - spare length cable box

TELEKOM ACCESS CATV MAN WAN LAN FTTx PON xWDM Industry

SZ-5 SPARE LENGTH CABLE BOX

OPTOCODE G1210



Spare Length Cable Box SZ-5

FEATURES:

- intended for use in cable chambers and outdoors
- protects the cable against external mechanical damage, secures proper cable bending radius
- interior access protected by a key locked lid
- maximum cable diameter 18 mm
- 4 cable entries, on top and bottom wall
- possibility of inserting horizontal cables
- made of aluminium sheet

STANDARD KIT:

- spare length cable box
- cable ports
- port plugs
- installation kit
- lock

TECHNICAL SPECIFICATIONS:

		SZ-5
fixing		4x ø10 mm 500x500 mm
number of cable ports		4
dimensions: width/height/depth [mm]		365/635/140
weight [kg]		5,4
cable capacity [m]	cable ø10 mm	100
	cable ø11 mm	90
	cable ø12 mm	70
	cable ø13 mm	60
	cable ø14 mm	50
	cable ø16 mm	30
	cable ø18 mm	20
interior access protection		lock
housing material/colour		aluminium/RAL 7035

ORDERING:

SZ-5 - Spare Length Cable Box

TELEKOM ACCESS CATV MAN WAN LAN FTTx PON xWDM Industry

OPTOCODE G1220

SZ-6 CABLE UNCOILING RACK

FEATURES:

- intended for use in cable manholes
- protects the cable against excessive strains in case of accidental pulling
- capacity from 15 up to 50 m of outdoor cable for cable diameters of 13 mm and 10 mm respectively
- easy insertion of the coiled outdoor cable into the rack through the hinged cover
- cable pulled with the minimum axial force around 5N unwinds freely from both sides
- protects cable against excessive axial strains and breakages
- compliant with ZN-95 TP SA-002/T p.3.3. standard the SZ-6 secures the required redundancy of the cable in separate manholes
- employed in areas of potential mining shocks
- used as a technological cable reserve set in the middle of the installed cable route
- the rack is mounted to the manhole wall with two 8 mm diameter screws, perpendicularly to cable route direction
- made of steel sheets with the anti-corrosion coating, finished with the powder varnish in RAL 7035 colour

STANDARD KIT:

- cable uncoiling rack
- installation kit

TECHNICAL SPECIFICATIONS:

		SZ-6
fixing		2x ø9 mm 280x280 mm
number of cable entries		6
dimensions: width/height/depth [mm]		550/550/220
weight [kg]		6
cable capacity [m]	cable ø10 mm	50
	cable ø11 mm	50
	cable ø12 mm	30
	cable ø13 mm	30
	cable ø14 mm	20
	cable ø16 mm	20
	cable ø18 mm	-
interior access protection		-
housing material/colour		steel/RAL 7035

Cable Uncoiling Rack - SZ-6

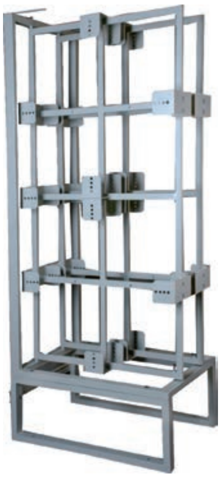
ORDERING:

SZ-6 - Cable Uncoiling Rack

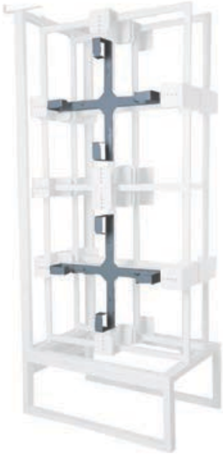
TELEKOM ACCESS CATV MAN WAN LAN FTTx PON xWDM Industry

SZ-7/N CABLE SPARE LENGTH FRAME

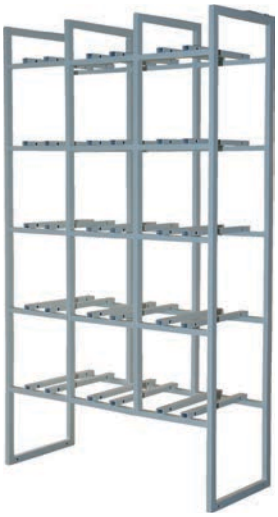
OPTOCODE G1230



SZ-7/2



Additional Cable Spare Length Frame SZ-7K



SZ-7/3/M

FEATURES:

- dedicated for use in cable chambers
- hinged frames for the storage of spare cable coils
- easy access to all cables routed from the top or from the bottom
- capacity of one hinged frame: 4 cable coils, 60 up to 150 m each
- maximum coil diameter: 800 mm
- installation of 4 additional SZ-7K spare cable frames on each hinged frame possible
- SZ-7K is used for smaller diameter cables with the maximum coil diameter of 550 mm
- maximum capacity of SZ-7K frame: 50 m of the cable with 10 mm diameter
- maximum capacity of SZ-7/4 with 4 frames is 32 cable coils (only if 4 SZ-7k frames are used)
- made of steel profiles finished with powder varnish in RAL 7035 colour

STANDARD KIT:

- cable spare length frame
- installation kit
- cable ties

ADDITIONAL STANDARD KIT

- additional cable spare length frame SZ-7K

TECHNICAL SPECIFICATIONS:

		SZ-7/1	SZ-7/2	SZ-7/3	SZ-7/4	SZ-7/3/M
fixing		standing	standing	standing	standing	standing
dimensions width/height/depth [mm]		350/1700/850	600/1700/850	850/1700/850	1100/1700/850	1000/1750/400
weight [kg]		35	50	65	80	65
cable capacity [m]	cable ø10 mm	150	150X2	150X3	150X4	-
	cable ø11 mm	120	120X2	120X3	120X4	-
	cable ø12 mm	100	100X2	100X3	100X4	-
	cable ø13 mm	80	80X2	80X3	80X4	-
	cable ø14 mm	60	60x2	60X3	60X4	-
	cable ø16 mm	30	30X2	30X3	30X4	-
	cable ø18 mm	20	20X2	20X3	20X4	-
housing material/colour		steel profiles/RAL 7035				

NOTICE:

1. Frame heights: 1.7 m without the base, 2.0 m with the base.
2. SZ-7K frames and lateral plates to be ordered separately

SZ-7/3M

- stores up to 15 optical cable splice closures
- stores optical splice closures of diameter up to 300 mm

ORDERING:

SZ-7/2 - Cable Spare Length Frame with two hinged frames for 8 outdoor cable coils

TELEKOM ACCESS CATV MAN WAN

OPTOCODE G1240

SZKL SPARE LENGTH CABLE BOX

FEATURES:

- dedicated for use in cable chambers
- applied in conjunction with PSPE Distribution Boxes' family
- storage of spare feeder cables and subscriber cables
- access to the interior protected by a key locked lid
- enables splicing of up to 48 fibre count outdoor cables
- can serve as a fibre splice closure and spare cable length box by itself (combines functionalities of MK-5/48 and SZ-4)

STANDARD KIT:

- spare length cable box
- lid
- splice trays
- cable ties and bands
- wall mounting kit
- lock

TECHNICAL SPECIFICATIONS:

		SZKL
fixing		4x ø8 mm 470x470 mm
number of cable ports		2
dimensions: width/height/depth [mm]		550/550/65
weight [kg]		5,7
cable capacity [m]	cable ø10 mm	50
	cable ø11 mm	40
	cable ø12 mm	30
	cable ø13 mm	15
	cable ø14 mm	10
	cable ø16 mm	-
	cable ø18 mm	-
interior access protection		lock
housing material/colour		steel sheet/RAL 7035

Spare Length Cable Box SZKL

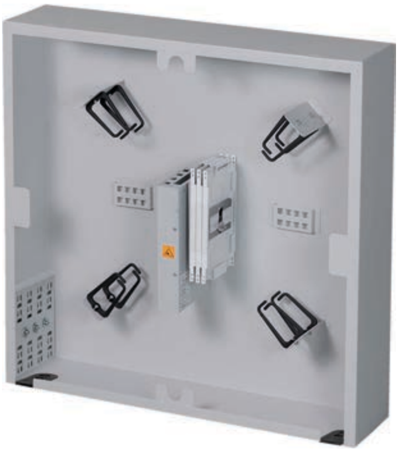
ORDERING:

SZKL - Spare Length Cable Box

TELEKOM ACCESS CATV MAN WAN

SZ-8 SPARE LENGTH CABLE BOX

OPTOCODE G1250



Spare Length Cable Box SZ-8

FEATURES:

- dedicated for use in cable chambers
- access to the interior protected by a key locked lid
- 6 round pre-punched cable entries, 2 open cable entry slots allowing insertion of the cable loop
- possibility of installation of up to three KS-3E splice trays
- possibility of installation of two Fibre Optic Distribution Boxes PSW-12/DIN
- STANDARD KIT outdoor cable termination plates
- space dedicated for storage and arrangement of outdoor cable loose tubes guided to splice trays and distribution boxes
- made of steel sheet finished with powder varnish

STANDARD KIT:

- spare length cable box
- rubber bushing
- rubber gland
- DIN rail
- cable ties and bands
- lock
- KS-3E splice trays

ADDITIONAL STANDARD KIT

- PSW-12/DIN Fibre Optic Distribution Box
- splittable corrugated protective tube

TECHNICAL SPECIFICATIONS:

		SZ-8
fixing		4x ø8 mm 560x560 mm
number of cable entries		6 round pre-punched, 2 open slots
dimensions: width/heigth/ depth [mm]		550/65/550
weight [kg]		13,8
cable capacity [m]	cable ø10 mm	100
	cable ø11 mm	100
	cable ø12 mm	80
	cable ø13 mm	60
	cable ø14 mm	50
	cable ø16 mm	30
	cable ø18 mm	20
interior access protection		lock
housing material/colour		steel sheet/RAL 7035

ORDERING:

SZ-8 - Spare Length Cable Box

TELEKOM ACCESS CATV MAN WAN

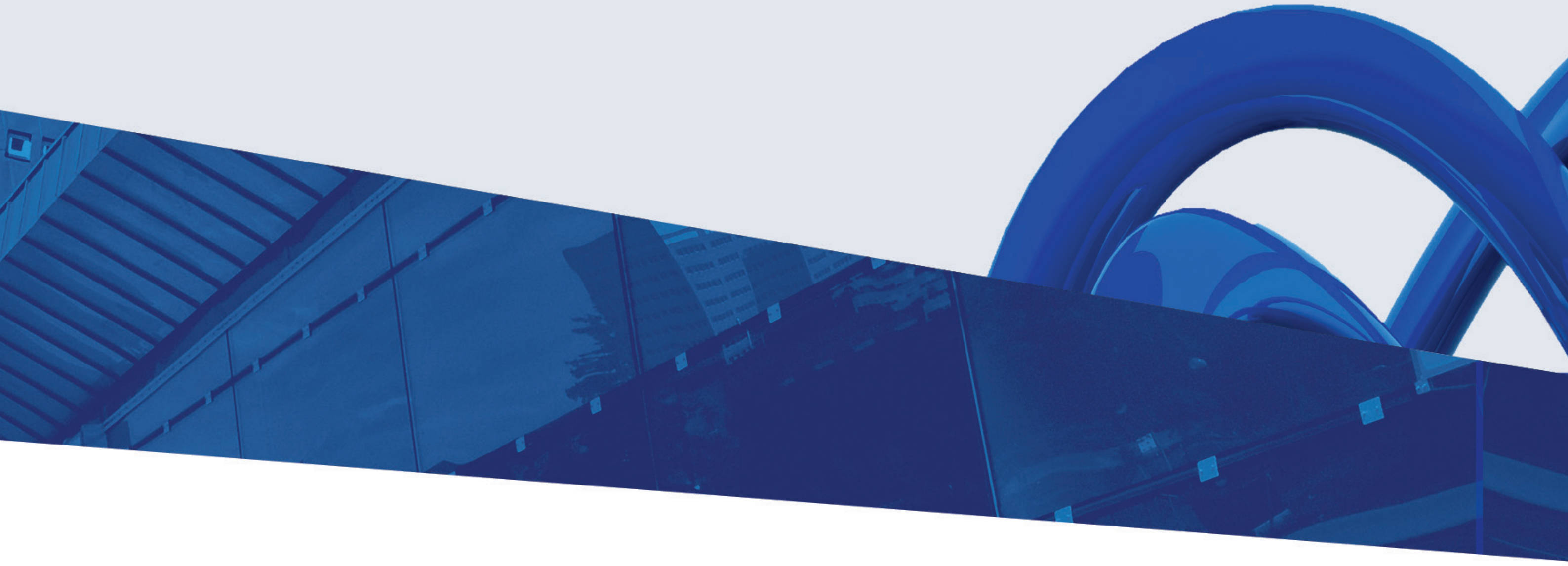
SPARE LENGTH CABLE BOXES AND RACKS - SUMMARY

		SZ-1	SZ-1.2	SZ-1.3	SZ-2	SZ-2.2	SZ-2.3	SZ-3/150	SZ-3/200	SZ-3/300	SZ-4	SZ-4.2	SZ-5
fixing		4x ø7 mm 530x530 mm		4x ø7 mm 630x630 mm	4x ø6,5 mm 280x280 mm	4x ø8 mm 300x300 mm	4x ø8 mm 500x500 mm	ø słupa 150 mm	ø pole 200 mm	ø pole 300 mm	4x ø6,5 mm 280x280 mm		4x ø10 mm 500x500 mm
number of cable entries		8	6	8	-	-	-	-			4		
dimensions: width/height/ depth [mm]		750/750/150	750/750/250	860/860/215	550/550/95	600/600/160	880/880/160	2 arches of 300 radius			550/550/100	750/750/150	365/635/140
weigth [kg]		16	20	22	0,9	1,7	4,4	22			6,5	12	5,4
cable capacity [m]	cable ø10 mm	150	250	350	50	100	200	80	80	80	50	150	100
	cable ø11 mm	130	200	300	50	80	180	70	70	70		120	90
	cable ø12 mm	100	180	250	40		170	60	60	60	40	100	70
	cable ø13 mm	80	150	200	30	70	160	50	50	50	30	80	60
	cable ø14 mm	60	120	180			150	40	40	40	30	70	50
	cable ø16 mm	30	50	50	-	-	120	20	20	20	20	30	30
	cable ø18 mm	-	-	50	-	-	100						20
interior access protection		lock	lock	lock	-	-	-	-	-	-	-	lock	lock
housing material/colour		steel or aluminium sheet/ RAL 7035		steel sheet/ RAL 7035	aluminium/ RAL 7035	acid resistant steel sheet/ RAL 7035	steel sheet/ RAL 7035	aluminium			steel sheet/RAL 7035		aluminium/ RAL 7035
OPTOCODE		G1170			G1180			G1190			G1200		G1210

		SZ-6	SZ-7/1	SZ-7/2	SZ-7/3	SZ-7/4	SZ-7/3/M	SZ-8	SZKL
fixing		2x ø9 mm 280x280 mm	standing	standing	standing	standing	standing	4x ø8 mm 560x560 mm	4x ø8 mm 470x470 mm
number of cable entries		6	-	-	-	-	-	6 round pre-punch, 2 open slots	2
dimensions: width/height/ depth [mm]		550/550/220	350/1700/850	600/1700/850	850/1700/850	1100/1700/850	1000/1750/400	550/65/550	550/65/550
weight [kg]		6	35	50	65	80	65	13,8	5,7
cable capacity [m]	cable ø10 mm	50	150	150X2	150X3	150X4	-	100	50
	cable ø11 mm	50	120	120X2	120X3	120X4	-	100	40
	cable ø12 mm	30	100	100X2	100X3	100X4	-	80	30
	cable ø13 mm	30	80	80X2	80X3	80X4	-	60	15
	cable ø14 mm	20	60	60x2	60X3	60X4	-	50	10
	cable ø16 mm	20	30	30X2	30X3	30X4	-	30	-
	cable ø18 mm	-	20	20X2	20X3	20X4	-	20	-
interior access protection		-	-	-	-	-	-	lock	lock
housing material/colour		steel/RAL 7035	steel sheet/RAL 7035					steel/RAL 7035	steel/RAL 7035
OPTOCODE		G1220	G1230					G1250	G1240

	fixing	number of cable entries	dimensions: width/height/ depth [mm]	weight [kg]	cable capacity [m]							interior access protection	housing material/ colour	OPTOCODE
					cable ø10 mm	cable ø11 mm	cable ø12 mm	cable ø13 mm	cable ø14 mm	cable ø16 mm	cable ø18 mm			
SZ-1	4x ø7 mm 530x530 mm	8	750/750/150	16	150	130	100	80	60	30	-	lock	steel or aluminium sheet/ RAL 7035	G1170
SZ-1.2		6	750/750/250	20	250	200	180	150	120	50	-	lock		
SZ-1.3	4x ø7 mm 630x630 mm	8	860/860/215	22	350	300	250	200	180	50		lock	steel sheet/RAL 7035	
SZ-2	4x ø6.5 mm 280x280 mm	-	550/550/95	0 .9	50		40	30	30	-	-	-	aluminium/ RAL 7035	G1180
SZ-2.2	4x ø8 mm 300x300 mm	-	600/600/160	1 .7	100	80		70		-	-	-	acid resistant steel/ RAL 7035	
SZ-2.3	4x ø8 mm 500x500 mm	-	880/880/160	4 .4	200	180	170	160	150	120	100	-	steel sheet/RAL 7035	
SZ-3/150	ø pole 150 mm	-	2 arches each with 300mm radius	22	80	70	60	50	40	20		-	aluminium	G1190
SZ-3/200	ø pole 200 mm											-		
SZ-3/300	ø pole 300 mm											-		
SZ-4	4x ø6,5 mm 280x280 mm	4	550/550/100	6 .5	50	50	40	30	30			-	steel sheet/RAL 7035	G1200
SZ-4.2		4	750/750/150	12	150	120	100	80	70	30		lock		
SZ-5	4x ø10 mm 500x590 mm	4	635/635/140	5 .4	100	90	70	60	50	30	20	lock	aluminium/ RAL 7035	G1210
SZ-6	2x ø9 mm 280x280 mm	6	550/550/220	6	50	50	30	30	20	20	-	-	steel sheet/RAL 7035	G1220
SZ-7/1	standing	-	350/1700/850	35	150	120	100	80	60	30	20	-	steel sheet/RAL 7035	G1230
SZ-7/2	standing	-	600/1700/850	50	150X2	120X2	100X2	80X2	60x2	30X2	20X2	-		
SZ-7/3	standing	-	850/1700/850	65	150X3	120X3	100X3	80X3	60X3	30X3	20X3	-		
SZ-7/4	standing	-	1100/1700/850	80	150X4	120X4	100X4	80X4	60X4	30X4	20X4	-		
SZ-7/3/M	standing	-	1000/1750/400	65	-	-	-	-	-	-	-	-		
SZ-8	4x ø8 mm 560x560 mm	6 round pre-punched, 2 open slots	650/650/155	13 .8	100		80	60	50	30	20	lock	steel sheet/RAL 7035	G1250
SZKL	4x ø8 mm 470x470 mm		550/65/550	5 .7	50	40	30	15	10	-	-	lock	steel sheet/RAL 7035	G1240

5

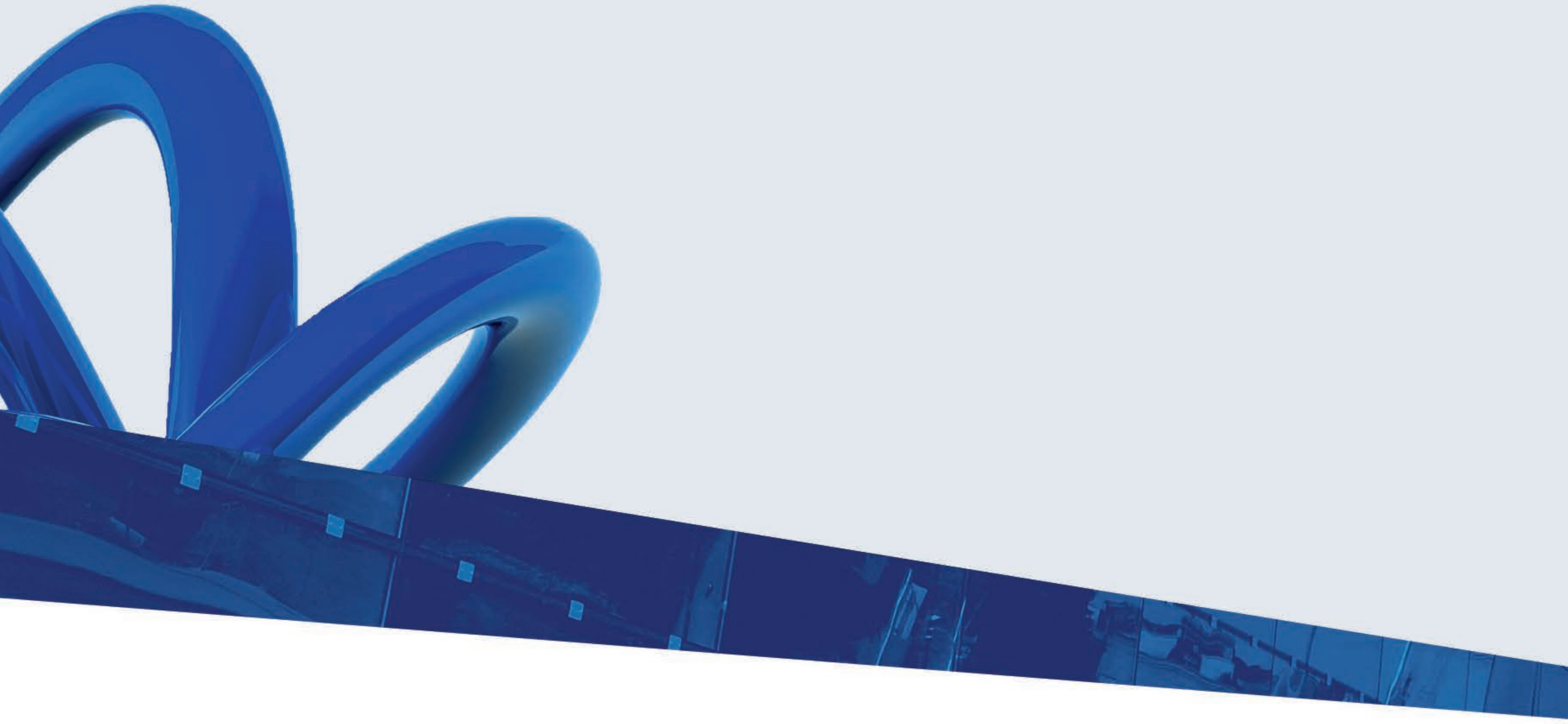


Modern access networks are aimed to enable the end user to benefit from nowadays telecommunication services (packet HD resolution TV, fast data transmission, voice communication). These requirements can be met only by networks based on optical fibre. Problems such as limited range and low throughput do not concern them in contrary to present copper networks.

Optical network can be based on traditional Ethernet or on a concept of a Passive Optical Network (PON). Ethernet is a point-to-point network, from telecommunication central office to a client signal is transmitted by one or two dedicated fibres. In case of PON, the signal is guided by one optical fibre and is divided by means of passive optical splitter on 32, 64 or 128 clients. The method employed in sharing transmission medium by multiple end-users in a large degree minimizes the required size of passive infrastructure and makes it the cheapest method of building optical access networks simultaneously preserving all the advantages of optical fibre.

The choice of components used for building optical networks depends on the chosen technology, type of buildings in the area as well as allready existing teletechnical infrastructure. The following chapter presents products and methods of building acces networks in various types of building developments.

FTTX ACCESS NETWORKS



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NETWORK INFRASTRUCTURE WITHIN MULTI-DWELLING BUILDINGS DEVELOPMENTS

At the network design stage, local conditions and location have to be taken into consideration and size of distribution point has to be defined.

Distribution point

In passive optical networks, the aim of a distribution point is to branch with the aid of optical splitters, fibres coming to a building from a Telecommunication Central Office and connect them to the vertical cabling system in the building. According to the needs the following products can be applied at the distribution point: PSMO, PSP, PSPE Indoor Distribution Cabinets with 32 to 288 clients capacity, PSH-2 Outdoor Cabinets with 12 to 144 clients capacity as well as PU Street Cabinets and PSS Splice Pillar with 20 to 1728 clients capacity.

Vertical cabling

For vertical cabling, it is advised to use Easy Access Cables. These cables have mechanically durable external coating layer protecting loosely organised optical fibres. Such a construction allows for withdrawing single fibres through windows cut in the cable’s coating.

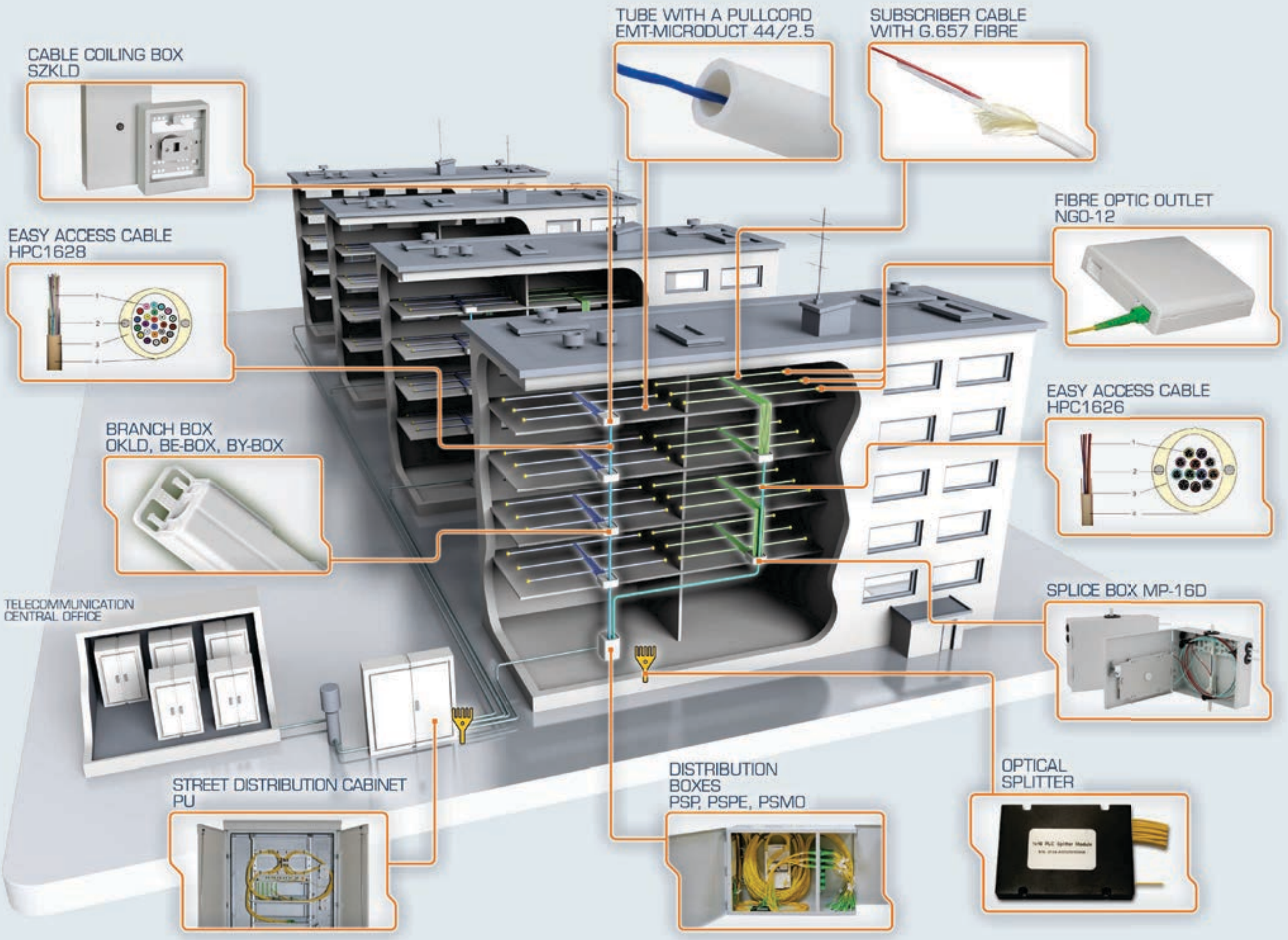
Easy Access Cables are offered in two versions: with 900 µm buffered fibres or with multifibre compact tubes. The window-cuts in the vertical cable are protected with a branch box or wall-mounted splice box. Using cables with 900 µm buffered fibres, to ensure the possibility of connecting clients on the highest level of a building, the coiling boxes with the capacity of 20 m of supplementary fibres are installed on the top floor.

Horizontal cabling

The method of connecing an end-user to a network is dependent on a version of employed cable. Connecting a subscriber with a single 900 µm buffered fibre is based on pulling a selected fibre out through a window-cut and inserting this fibre into a microtube going from the window in the cable to subscriber’s outlet. In the outlet, the SC/APC pigtail is spliced to the selected fibre.

While using a multifibre cable with compact tubes, clients are connected by pigtails of increased mechanical durability. The pigtails are spliced with the fibres from the compact tube drawn out through a window cut in vertical cable, and later are distributed to subscribers’ outlets. The window-cuts are covered with wall mounted splice boxes..

NETWORK INFRASTRUCTURE WITHIN MULTI-DWELLING BUILDINGS DEVELOPMENTS


TUBE WITH A PULLCORD
EMT-MICRODUCT 44/2.5
SUBSCRIBER CABLE
WITH G.657 FIBRE
CABLE COILING BOX
SZKLD
FIBRE OPTIC OUTLET
NGO-12
EASY ACCESS CABLE
HPC1628
EASY ACCESS CABLE
HPC1626
BRANCH BOX
OKLD, BE-BOX, BY-BOX
SPLICE BOX MP-16D
TELECOMMUNICATION
CENTRAL OFFICE
STREET DISTRIBUTION CABINET
PU
DISTRIBUTION
BOXES
PSP, PSPE, PSMO
OPTICAL
SPLITTER

Passive Optical Network on multi-dwelling buildings developments

STREET CABINET PU - FTTX DISTRIBUTION NODE

OPTOCODE J1010

Street Cabinet PU-10 with FTTX equipment

FEATURES:

- outdoor cabinet, optimal for building distribution nodes of high capacities
- capability of mounting passive optical elements of modules MPPO and MS
- enables insertion of microducts and cable-duct tubes
- stillage useful height 20U, 30U, 33U, 66U

EQUIPMENT:

- cable entries
- cable organizers
- cable fixing and fibre distribution plate
- concrete plinth

TECHNICAL SPECIFICATIONS:

	PU-5	PU-7	PU-10	PU-20
dimensions: width/height/depth [mm]	858/1170/465	858/1615/465	858/1752/465	1716/1752/465
usefull 19” frame installation height	20U	30U	33U	66U
equipment for PON purposes - with splitter outputs cross-connect capability				
splitter modules 1x32 in PS-19/144/3U	14	24	24	54
19'' Fibre Optic Patch Panels PS-19/144 for terminating client’s cables	3	6	6	12
19’’ Fibre Optic Patch Panels for termination of the cables routed from the OLT to PU cabinets equipped with PS-19/1U, PS-19/2U	1	1	1	1
cable bracket plate TU-19	2	2	2	6
19” Excess Cable Tray SZ-19L	3	6	6	12
maximum number of PON clients with recommended equipment	432	768	768	1728
equipment for PON purposes - cross-connects with patchcords				
19'' frames PPO-19/3U for mounting optical splitters in MPPO-3 modules	2	4	4	8
splitter modules 1x32 in MPPO-3	8	14	16	32
19’’ Fibre Optic Patch Panels PS-19 for terminating clients’ cables	2	3	4	8
19’’ Fibre Optic Patch Panels for termination of the cables routed from the OLT to PU cabinets equipped with PS-19/1U	1	1	1	1
cable bracket plate TU-19	2	4	4	8
19” Excess Cable Tray SZ-19L	2	3	4	8
maximum number of PON clients with recommended equipment	256	432	512	1024

ORDERING:

PU-10 - Street Cabinet with 33U intallation useful height

FTTx PON

OPTOCODE J1020

PSP FIBRE OPTIC DISTRIBUTION BOX

FEATURES:

- for use in FTTH networks in multi-dwelling buildings
- wall-mounted on the lowest level of a building
- terminates cables coming to the building from Telecommunication Central Office, vertical cables and enables installation of optical splitters
- connecting clients by cross-connecting optical splitter outputs

EQUIPMENT:

- case with a lock
- KSQ and KS-24 splice trays (set according to the table, applies to KS-24 tray)
- cable ties, description table
- wall installation kit
- installation and handling instruction

TECHNICAL SPECIFICATIONS:

	PSP-32	PSP-72	PSP-144
number of splices on client cable side	36	72	144
number of patching fields on client cable side	36	72	144
number of splices in a splice tray	3/12	3/24	6/24
number of splices on feeder cable side	12	12	24
number of patching fields on feeder cable side	4	12	24
number of splice trays on feeder cable side	1	1	1
number of optical splitters	2	4	7
splitter pigtail length [m]	1	1	1
connector standard	SC		
recommended customer distribution pigtail length [m]	1,5	1,5	2,5
number of cable/duct entries	6	12	12
maximum number of entering cables	18	36	36
maximum diameter of cable/duct entries [mm]	ø37	ø37	ø37
dimensions: width/height/depth [mm]	405/305/100	505/370/135	560/555/180
weight [kg]		8	
colour	RAL 7035		
housing material	powder coated steel sheet		
mechanical IK protection	IK10		
environmental IP protection	IP50		

Fibre Optic Distribution Box PSP-32

ORDERING:

PSP-32 - Wall-Mounted Distribution Box, for use in FTTH networks, pigtails, adapters and splitters to be ordered separately

FTTx PON

PSPE FIBRE OPTIC DISTRIBUTION BOX

OPTOCODE J1030

Distribution Box PSPE-72

Distribution Box PSPE-144

FEATURES:

- for use in FTTH networks in multi-dwelling buildings
- wall-mounted on the lowest level of a building
- terminates cables coming to the building from Telecommunication Central Office, vertical cables and enables installation of optical splitters
- separated area for terminations of feeder cables incoming to the distribution box from telecommunication central office as well as vertical cables in the building
- separate access to a part of distribution box containing splices and patching fields
- connecting clients by cross-connecting optical splitter outputs
- possibility of mounting Easy Access Cable Coiling Box SZKL on the backside of PSPE-144 or above/under PSPE-72, PSPE-144, PSPE-288

EQUIPMENT:

- case with a lock
- KS-3E splice trays
- cable ties, description table
- wall installation kit
- installation and handling instruction

TECHNICAL SPECIFICATIONS:

	PSPE-72	PSPE-144	PSPE-288
splice/connector capacity of client cable side	72	144	288
number of splice trays on client cable side	3	6	12
splice/connector capacity on feeder cable side	12/6	12/6	12
number of splice trays on feeder cable side	1	1	1
number of optical splitters	2	4	7
maximum splitter dimensions: width/height/depth [mm]	114/140/18	114/140/18	114/140/18
splitter pigtail length [m]	1	1	1.5
connector standard	E2000, SC		
recommended customer distribution pigtail length [m]	3.5	4.0	5.0
number of cable/duct entries	2 slot entries, one on top and one on the bottom of the distribution box		
maximum number of entering cables	8	16	16
maximum diameter of entering cables [mm]	18		
dimensions: width/height/depth [mm]	550/380/180	550/550/180	550/900/180
weight [kg]	8	9	11
colour	RAL 7035		
housing material	powder coated steel sheet		
mechanical IK protection	IK10		
environmental IP protection	IP50		

ORDERING:

PSPE-72 - Wall-Mounted Distribution Box, for use in FTTH networks, pigtails, adapters and splitters to be ordered separately

FTTx PON

OPTOCODE J1035

SZKL EASY ACCESS CABLE COILING BOX

FEATURES:

- intended for cooperation with Fibre Optic Distribution Boxes PSPE
- in the basic version offered without a lid, intended for mounting under Fibre Optic Distribution Boxes PSPE-144
- has transport channels, enabling mounting under or over Distribution Boxes PSPE
- when mouning over or under Fibre Optic Distribution Boxes PSPE, a case with a lid should be ordered
- includes trays for splices

EQUIPMENT:

- lidless case
- KS-3E splice trays
- wall installation kit
- installation instruction

TECHNICAL SPECIFICATIONS:

		SZKL
maximum number of splices		48
cable capacity [m]	cable ø13 mm	12 m in a frame
	cable ø5.5 mm	35 m in outer handles
number of splice trays		2
number of inputs		2 slot entries
maximum number of entering cables		3
maximum diameter of entering cables [mm]		13.5
dimensions: width/height/depth [mm]		550/550/65
weight [kg]		5
colour		RAL 7035
housing material		powder coated steel sheet
mechanical IK protection		IK10
environmental IP protection		IP20

Easy Access Cable Coiling Box SZKL for Distribution Box PSPE-144

ORDERING:

SZKL- Cable Coiling Box for PSPE-144 Distribution Box

FTTx PON

PSMO MULTI-OPERATOR DISTRIBUTION BOX

OPTOCODE J1040

Multi-operator Distribution Box PSMO-1/36

Multi-operator Distribution Box PSMO-2/40

FEATURES:

- for use in FTTH networks in multi-dwelling buildings
- wall-mounted on the lowest level of a building
- terminates cables coming to the building from Telecommunication Central Office, vertical cables and enables installation of optical splitters
- stackable with cross connection possibility between operators
- top distribution box in the frame designated for terminating vertical cables in a building
- the lower one dedicated for termination of operators' cables
- client connection based on patchcord crossing between patching field of the distribution box, where vertical cables are terminated and patching field of the operator distribution box
- builiding a network based on Distribution Boxes PSMO-1, appropriate number of single PSMO-1 is collated, one for vertical cables of a building, the other one for operator
- Distribution Boxes PSMO-2 consist of two modules, the upper designated for terminating vertical cables in a building, the lower designated for terminating cables of one operator

EQUIPMENT:

- case with a lock
- KSQ splice trays
- cable ties, description table
- wall installation kit
- installation and handling instruction

TECHNICAL SPECIFICATIONS:

	PSMO-1/36	PSMO-2/40	PSMO-2/64	PSMO-2/144
number of splices	36	2x48	2x72	2x144
number of patching fields	36+2	2x40	2x64	2x144
number of splice trays	3	2x4	2x6	2x12
maximum number of splitters	2	6	6	6
maximum splitter dimensions: width/height/depth [mm]	80/100/10	80/100/10	114/140/18	114/140/18
splitter pigtail length [m]	1	1	1	1
connector standard	SC or E-2000			
recommended pigtail length [m]	1.5	1.5	1.5	1.5
number of cable/duct entries in the side wall	1			
number of cable entries in the upper wall	1 slot entry			
maximum number of entering cables	1	2	4	6
maximum diameter of entering cables [mm]	ø14			
dimensions: width/height/depth [mm]	500/200/120	450/400/140	550/550/180	550/900/180
weight [kg]	3.5	7	9	12
colour	RAL 7035			
housing material	powder coated steel sheet			
mechanical IK protection	IK10			
environmental IP protection	IP41			

ORDERING:

PSMO-2/40 - Multi-operator Distribution Box, applicable for FTTH networks

FTTx PON

OPTOCODE J1045

PSH-2 OUTDOOR DISTRIBUTION BOX

Distribution Box PSH-2/24

FEATURES:

- wall-mounted distribution box, intended for mounting outside or inside buildings
- designed for installation in highly dusted industrial environment
- possibility of installing optical splitters
- separate splice box and cross-connect area
- IP66 rated environmental protection
- possibility of installation on a plinth
- connecting clients by cross-connecting optical splitter outputs

EQUIPMENT:

- adapter plate
- KS-3E splice trays
- cable ports (e.g. DP-13, DP-16, DP-21)
- cable ties and brackets
- installation and handling instruction
- installation kit

TECHNICAL SPECIFICATIONS:

	PSH-2/12	PSH-2/24	PSH-2/48	PSH-2/72	PSH-2/96	PSH-2/144
number of splice trays	2xKS-3E		4xKS-3E	6xKS-3E	8xKS-3E	12xKS-3E
maximum number of splices	24	24	48	72	96	144
number of patching fields	12	24	48	72	96	144
maximum number of splitters	2	2	3	3	6	6
maximum splitter dimensions: width/height/depth [mm]	80/100/10	80/100/10	80/100/10	114/140/18	114/140/18	114/140/18
splitter pigtail length [m]	1	1	1	1	1	1
recommended pigtail length [m] 0,9 mm	2.5		3.0		4.0	
recommended pigtail length [m] 2,0 mm	2.5				3.0	4.0
number of cable entries	4		8			12
maximum diameter of entering cable [mm]	18				21	26
dimensions: width/height/depth [mm]	300/400/200		400/500/200		500/600/230	800/600/300
weight [kg]	5.8		7.5	8	11	26
housing material	glass fibre reinforced polyester					
mechanical IK protection	IK10					
environmental IP protection	IP66					

Distribution Box PSH-2/96

ORDERING:

PSH-2/96/E/SC - Outdoor Optical Fibre Distribution Box for 96 pigtails and E2000 or SC adapters

FTTx PON

HPC1628 EASY ACCESS FIBRE

OPTOCODE J1050

FEATURES:

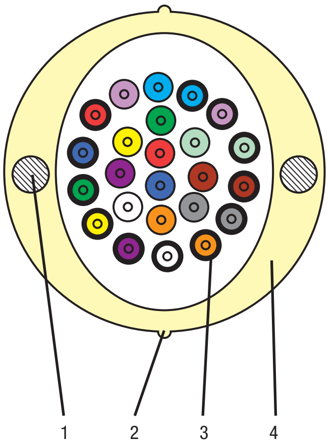
- capacity up to 48, G.657 A2, 900 µm buffered fibres
- applied in vertical installations in multi-dwelling buildings
- easy access to fibres through a window-cut
- possibility to draw up to 20 m of fibre out of a cable through a window-cut
- branching achieved by leading a drawn fibre to client's apartment
- non-flammable external coating, halogen free LSOH, in accordance with international fire safety requirements

SUPPLEMENTARY ACCESSORIES:

- knives for cutting windows in cable sheath
- tube with a pullcord for fibre protection, laid from a window-cut in a cable to a subscriber's outlet

TECHNICAL SPECIFICATIONS:

HPC1628 cable construction



1. *Fibre Reinforced Plastic (FRP) strength members*
2. *opening side location maker for proper window cutting*
3. *900 µm easy strip buffer*
4. *halogen free coating (LSOH)*

fibre count		1-8J	1-12J	24J	48J
temperature range [°C]:	transport and storage	-40 to +70			
	installation	-5 to +50			
	operation	-15 to +60			
maximum pulling force [N]		300	500		600
crush resistance [N/cm]		100	200		
minimum bending radius [mm]		65	90	100	130
standard packaging		cylinders of 2 or 4 km			
storage		indoor			
flame retardancy		IEC60332-1 and IEC60332-3C			
nominal diameter [mm]		6.6	8.5	10.5	13.5
nominal weight [kg/km]		32 to 38	55 to 64	87 to 97	122 to 143
marking of outer sheath		manufacturing year and week - ACOME - fibre count and type - product code + metre marks			

ORDERING:

AC-HPC1628/1/24/G.657 D - Easy Access Cable, 24 fibres G.657 A2, 900 µm buffered

FTTx PON

OPTOCODE J1060

HPC1626 EASY ACCESS FIBRE

FEATURES:

- up to 288 fibres organised in compact tubes
- 2, 4, 6, 8 or 12 fibres per tube
- applied in vertical installations in multi-dwelling buildings
- easy access to fibres through a window-cut
- possibility to draw out up to 6 m of compact tube through a window-cut
- branching achieved by splicing in a shaft splice box
- halogen free coating LSOH, in accordance with international fire safety requirements

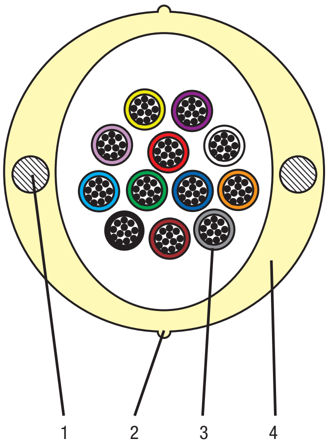
SUPPLEMENTARY ACCESSORIES:

- knives for cutting windows in cable sheath
- tube with a pullcord for fibre protection, laid from a window-cut in a cable to a subscriber’s outlet

TECHNICAL SPECIFICATIONS:

fibre count		2-48J	2-72J	26-144J	50-288J
configuration of cable tubes		max. 13 tubes each of 2 SMF or 4 tubes of 12 SMF each	max. 18 tubes each of 2 SMF or 6 tubes of 12 SMF each	max. 34 tubes each of 2 SMF or 12 tubes of 12 SMF each	max. 64 tubes each of 2 SMF or 24 tubes of 12 SMF each
temperature range [°C]:	transport and storage	-40 to +70			
	installation	-5 to +50			
	operation	-15 to +60			
maximum pulling force [N]		300	500		600
crush resistance [N/cm]		100	200		
minimum bending radius [mm]		60	90	100	130
standard packaging		cylinders of 2 or 4 km			
storage		indoor			
flame retardancy		IEC60332-1 i IEC60332-3C			
nominal diameter [mm]		6.6	8.5	10.5	13.5
nominal weight [kg/km]		32 to 38	55 to 64	81 to 95	112 to 140
marking of outer sheath		manufacturing year and week - ACOME - fibre count and type - product code + metre marks			

HPC1626 Cable construction



1. *Fibre Reinforced Plastic (FRP) strength members*
2. *opening side location maker for proper window cutting*
3. *compact tube with 2, 4, 6, 8 or 12 singlemode fibres*
4. *halogen free coating (LSOH)*

ORDERING:

SC-HPC1626/CT/3/12/G.657 - Easy Access Cable 36 fibres, structure: 3 modules, 12 fibres each

ACCESSORIES FOR EASY ACCESS CABLES

OPTOCODE J1065

NKLDO Knife

NKLDO KNIFE

FEATURES:

- enables precise window cutting in an easy access cable
- cutting depth adjustment
- intended for cutting windows in cable's coating inside branch boxes of small sizes

ORDERING:

NKLDO - Knife For Easy Acces Cable

NKLDA Knife

NKLDA KNIFE

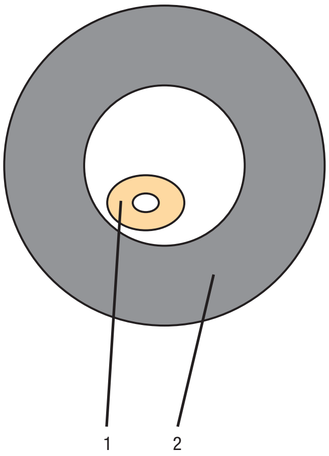
FEATURES:

- enables precise window cutting in an easy access cable
- cutting depth adjustment
- rails making knife motions easier

ORDERING:

NKLDO - Knife For Easy Acces Cable

Tube with a pullcord



1. *pullcord*
2. *external coating*

TUBE WITH A PULLCORD EMT-MICRODUCT 4/2.5

FEATURES:

- shielding of fibre laid from a window-cut in a cable to subscriber's outlet
- diameter 4/2.5 mm or 5/3.5 mm
- non-flammable material, does not emit halogen compounds

ORDERING:

EMT-MICRODUCT 4/2.5 - primary microtube LFH, white, diameter 4 mm with a pullcord (pack size 4 km)

FTTx PON

OPTOCODE J1070

BRANCH BOXES

FEATURES:

- intended for branching from vertical cable in multi-dwelling buildings
- mounted on previously installed vertical cable
- available in versions for performing splices or as protective cover of branching
- possibility of mounting in places of limited space - small dimensions

EQUIPMENT:

- cable ties and brackets
- installation and handling instruction
- installation kit

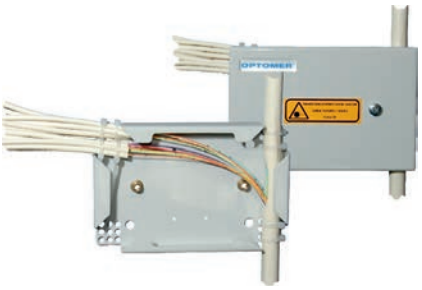
TECHNICAL SPECIFICATIONS:

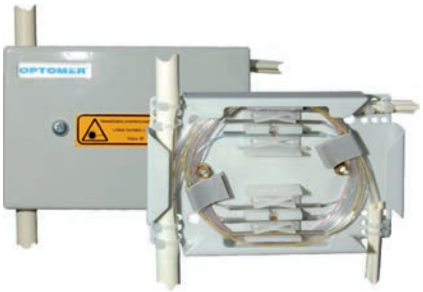
	OKLD	OKLDS	By-Box 6	Be-Box 12
number of splices	0	12	0	12
number of splice trays				1
number of input/output vertical cables	1/1	1/1	1/1	1/1
maximum number of client's cables or microtubes	12x Φ5 mm	12x Φ5 mm	6x Φ5 mm	12x Φ5 mm
maximum diameter of cable/duct entering a splice/branch box [mm]	13,5			
dimensions: width/height/depth [mm]	147/97/27	147/97/27	36.5/140/27	64/215/40
weight [kg]	0.2	0.2	0.033	0.066
colour	RAL 7035	RAL 9010	RAL 9010	
housing material	powder coated steel sheet		plastic	
mechanical IK protection	IK10	IK08	IK08	
environmental IP protection	IP20	IP30	IP41	

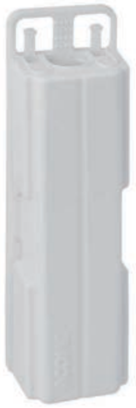
ORDERING:

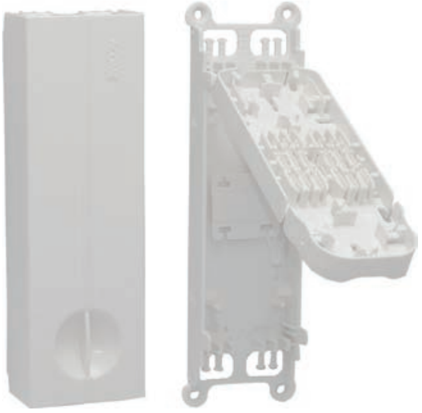
Be-Box 12 - Easy Access Cable Branch Splice Box, capacity up to 12 splices, material - plastic

FTTx PON


Branch Box OKLD


Branch Box OKLDS


Branch Box By-Box 6


Branch Box Be-Box 12

SZKLD EASY ACCESS CABLE COILING BOXES

OPTOCODE J1080

Easy Access Cable Coiling Boxes SZKLD-1, SZKLD-2

FEATURES:

- designed for storing spare lengths of easy access cable to be used for connection of customers on top floors of multi-dwelling buildings
- recommended for use with HPC1628 cable
- wall-mounted, detachable lockable cover
- possibility of installation within existing vertical ducting infrastructure in a building

EQUIPMENT:

- cable ties and brackets
- installation and handling instruction
- installation kit

TECHNICAL SPECIFICATIONS:

	SZKLD-1	SZKLD-2	SZKLD-3
maximum spare length of 900 µm buffered fibre [m]	400	1000	400
number of cable/duct entries in the bottom wall	2	2	2
diameter of cable/duct entries in the botoom wall of the box [mm]	37 or 47	37 or 47	28
number of cable/duct entries in the side wall	-	-	2 on each of the sides
diameter of cable/duct entries in the side walls of the box [mm]	-	-	16
dimensions: width/height/depth [mm]	220/280/75	220/400/75	220/280/75
weight [kg]	2	2.5	2
colour	RAL 7035		
housing material	powder coated steel sheet		
mechanical IK protection	IK10		
environmental IP protection	IP41		

ORDERING:

SZKLD-1 - Easy Access Cable Coiling Box, capacity up to 400 m of coiled 0.9 mm buffered fibre

FTTx PON

OPTOCODE J1060

MP-16D SHAFT SPLICE BOX

FEATURES:

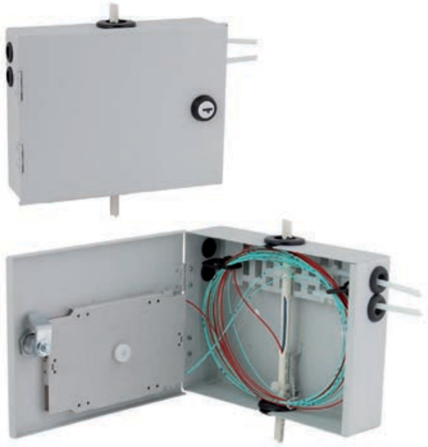
- intended for branching fibres from vertical cable in multi-dwelling buildings
- equipped with cable entries enabling for mounting the splice box on previously installed vertical cable
- possibility of installation within 26 mm diameter ducting system
- enables up to 12 optical fibre splices
- two cable entries for customer cables on each side of the box
- lockable

EQUIPMENT:

- splice tray for 12 splices
- cable entries
- cable ties and brackets
- installation and handling instruction
- installation kit

TECHNICAL SPECIFICATIONS:

	MP-16D
number of splices	12
number of splice trays	1
total spare length of 0.9 mm buffered fibre or compact tube [m]	20
number of vertical cable/ducts entries for ø26 mm tubes	1 on top and bottom wall each
number of horizontal cable/ducts entries for ø16 mm tubes	2 on each of side walls
maximum diameter of vertical cable entering splice box [mm]	18
dimensions: width/height/depth [mm]	200/150/50
weight [kg]	1
colour	RAL 7035
housing material	powder coated steel sheet
mechanical IK protection	IK10
environmental IP protection	IP41



Shaft Splice Box MP-16D

ORDERING:

MP-16D - FTTH Wall-Mounted Splice Box of 12 optical fibre splices capacity

FTTx PON

NETWORK INFRASTRUCTURE WITHIN HOUSING DEVELOPMENTS WITH DETACHED HOUSES

The method of building a network on a detached housing development is dependent on inter alia, local environment and the available infrastructure. In order to minimise the costs, previously built technical infrastructure is employed, being: dark fibres, cable ducts, existing aerial network supports. Depending on the infrastructure used to build distribution network, distribution point and subscriber's terminal, different solutions are employed.

Distribution network

Building underground distribution network in existing cable ducts or in the area not equipped with ducts, the microduct system can be applied. This allows quick and easy installation of fibre units and minicables. Microducts enable easy and convenient network expansion in the future as well as, in comparison with a traditional network, in a large degree limits the number of spliced connections, lowers the amount of necessary cable spare lengths and number of telecom manholes. The advantage of aerial network infrastructure is low network deployment costs since no digging in ground is involved. However, the disadvantage is the direct influence of environmental conditions on the whole network infrastructure which results in higher failure rate. Deploying aerial networks is advised in rural and rocky or marshy areas.

Distribution point

Optimal choice of capacity and location of a distribution point in a high degree influences financial requirements linked with the access infrastructure. In this case, building a network based on cascaded splitters is optimal. In such a configuration, on the housing development outskirts there is a distribution cabinet with the first splitter (e.g. 1x8) of the splitter cascade. This way, preliminary OLT port division is obtained. In the vicinity of clients group, another distribution box is installed, being the next stage of the cascade. Applying this scheme enables for minimizing individual subscribers' cable lengths.

In case of underground networks, it is advantageous to employ single distribution box/pillar of small capacity e.g. PSS-2, PSS-3; and with aerial networks splice box with a patching field.

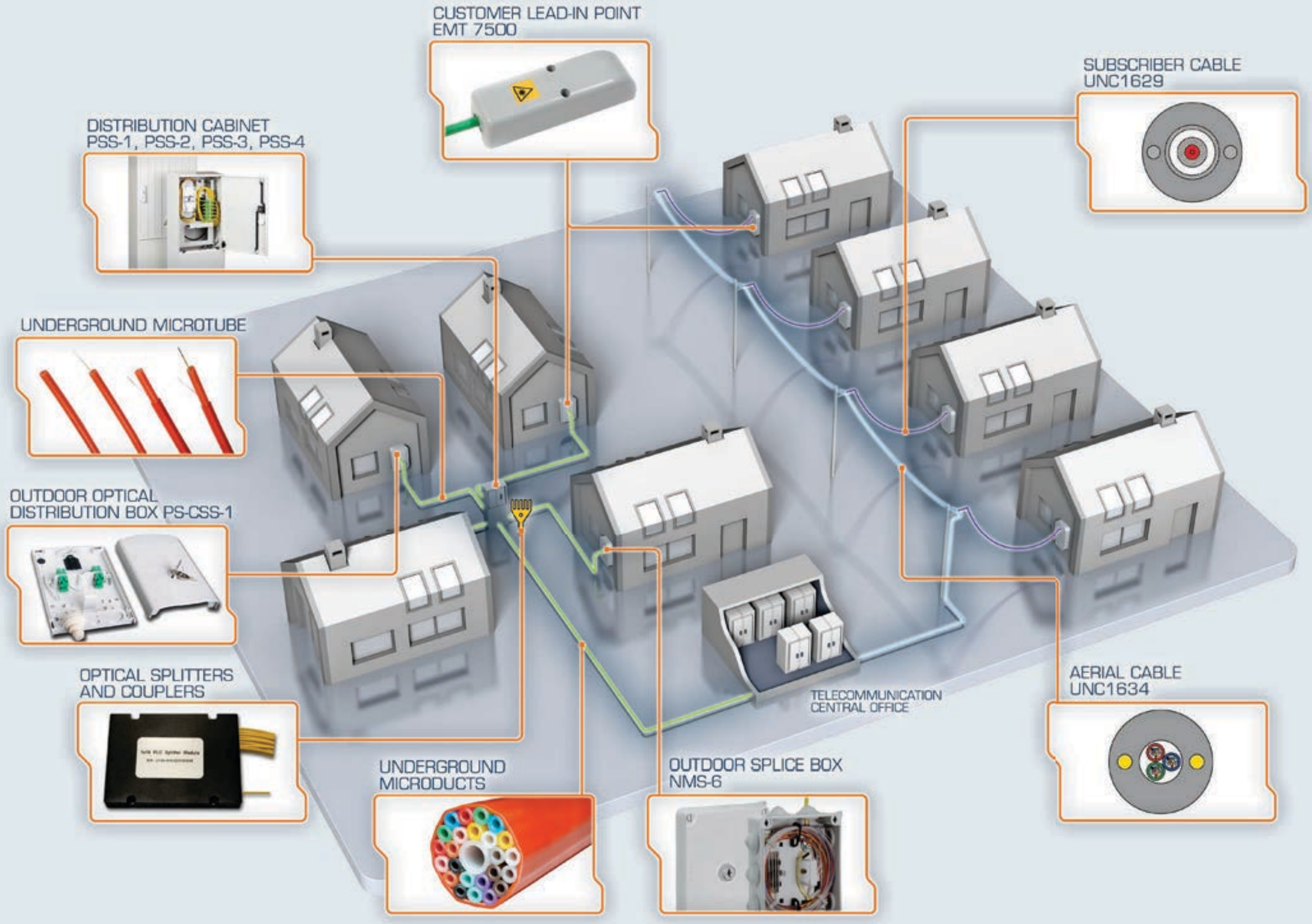
The aim of distribution/splice box is to ensure proper organization and protection of terminations of fibres coming to a housing development from telecommunication central office, division with an optical splitter and connection with fibres deployed to optical outlet in clients' apartments.

Subscriber terminal

In an underground network, subscriber's terminal can be realized with a thick-walled microtube, conducted from a distribution pillar to client's house. The price of such a terminal is close to the price of a terminal made with an underground cable, moreover a swift fibre units replacement deployed from the distribution pillar to client is possible.

In an aerial and underground networks, it is advised to minimise the number of spliced and detachable connections, by installing prefabricated, specially dimensioned subscriber pigtails. These pigtails are blown or pulled into microtube, from optical outlet mounted in client's home to distribution pillar where fibres are spliced with fibres from distribution network.

NETWORK INFRASTRUCTURE WITHIN HOUSING DEVELOPMENTS WITH DETACHED HOUSES


CUSTOMER LEAD-IN POINT EMT 7500
SUBSCRIBER CABLE UNC1629
DISTRIBUTION CABINET PSS-1, PSS-2, PSS-3, PSS-4
UNDERGROUND MICROTUBE
OUTDOOR OPTICAL DISTRIBUTION BOX PS-CSS-1
OPTICAL SPLITTERS AND COUPLERS
TELECOMMUNICATION CENTRAL OFFICE
AERIAL CABLE UNC1634
UNDERGROUND MICRODUCTS
OUTDOOR SPLICE BOX NMS-6

Passive Optical Network on a development of single family houses

PSS-1, PSS-2 FIBRE OPTIC DISTRIBUTION/SPLICE PILLAR

OPTOCODE J1130

Distribution/Splice Pillar PSS-1

Distribution/Splice Pillar PSS-2

FEATURES:

- for use in FTTH networks on single family houses developments
- enables termination of cables coming to the pillar from Telecommunication Central Office side, termination of cables coming to single family houses and installation of optical splitters
- provides space for accumulating supply of operating fibres terminated in the pillar, which enables for convenient cabling the product in a service car

EQUIPMENT:

- adapter plate
- KS-3E splice trays
- cable ports (e.g. DP-13, DP-16, DP-21)
- cable ties and brackets
- installation and handling instruction
- installation kit
- concrete plinth (optional)

TECHNICAL SPECIFICATIONS:

	PSS-1	PSS-2
number of splices on client cable side	12 - one space for splicing of client and feeder fibres	24
number of splices on feeder cable side		12
number of patching fields	12	24
number of splitters	0	2
maximum splitter dimensions: width/height/depth [mm]	-	80/100/10
connector standard	SC or E-2000	
recommended customer distribution pigtail length [m]	1,5	1,5
maximum number of cables entering the pillar	3	26
maximum diameter of cable/duct entries [mm]	14	16
dimensions: diameter/height [mm]	ø160/1300	ø170/1700
height after burrying [m]	0.8	0.8
weight [kg]	5	7
colour	RAL9017	
housing material	HDPE	
mechanical IK protection	IK10	
environmental IP protection	IP44	

ORDERING:

PSS2 - Outdoor Distribution/Splice Pillar intended for connecting 20 PON clients

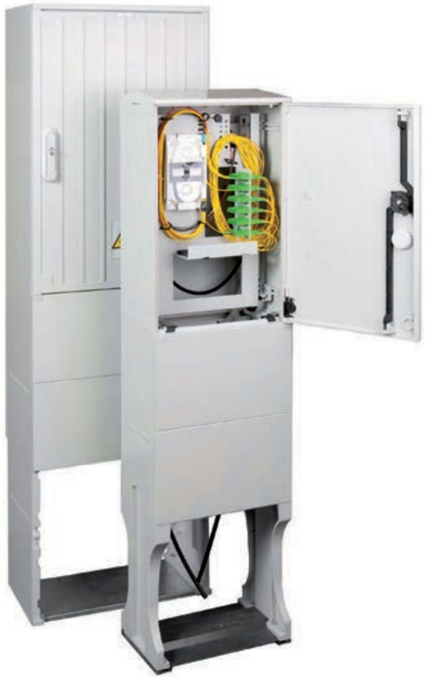
FTTx PON

OPTOCODE J1140

PSS-3, PSS-4 FIBRE OPTIC DISTRIBUTION/SPLICE PILLAR

FEATURES:

- for use in FTTH networks on single family house developments
- terminates cables coming to the building from Telecommunication Central Office, vertical cables and enables installation of optical splitters
- provides space for accumulating supply of operating fibres terminated in the pillar, which enables for convinient cabling the product in a service car



Distribution/Splice Pillars PSS-3/32, PSS-3/64

EQUIPMENT:

- adapter plate
- KS-3E splice trays
- cable ties and brackets
- installation and handling instruction
- installation kit

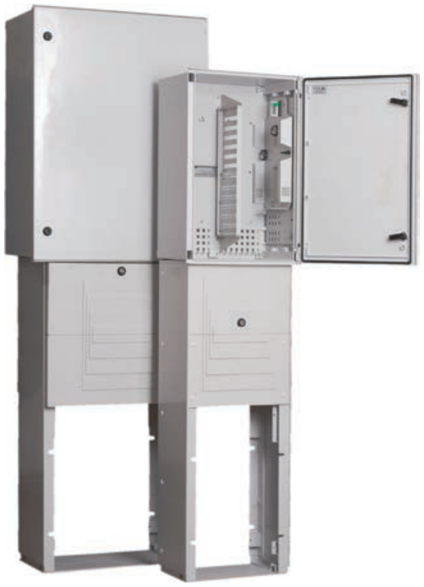
TECHNICAL SPECIFICATIONS:

	PSS-3/32	PSS-3/64	PSS-4/128	PSS-4/256
number of splices	48	72	144	288
number of patching fields	36	72	144	288
number of optical splitters	4	8	16	32
maximum splitter dimensions: width/height/depth [mm]	80/100/10	114/140/18	114/140/18	114/140/18
splitter pigtail length [m]	1	1	1	1
connector standard	SC or E-2000			
recommended customer distribution pigtail length [m]	1.5	1.5	1.5	1.5
maximum number of cables entering the pillar	32 client 2 feeder	64 client 2 feeder	128 client 2 feeder	256 client 2 feeder
dimensions: width/height/depth [mm] cabinet/pillar	400/1500/245	530/1750/320	500/600/230 465/1000/200	600/800/300 500/1000/300
height after burying [m]	0.9	1.1	1.1	1.3
weight [kg]	20	30	18	25
colour	RAL 7035			
housing material	glass fibre reinforced polyester			
mechanical IK protection	IK10			
environmental IP protection	IP54			

ORDERING:

PSS-3/32 - Distribution/Splice Pillar, intended for connecting up to 32 PON clients

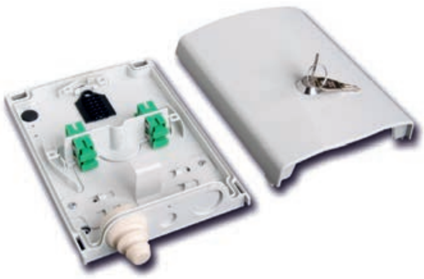
FTTx PON



Distribution/Splice Pillars PSS-4/128, PSS-4/256

PS-CCS-1 SPLICE CLOSURE/CROSS-CONNECT SPLICE BOX

OPTOCODE J1090



Outdoor Splice Closure/Cross-Connect Splice Box PS-CCS-1

FEATURES:

- distribution/splice box, advised for using in FTTH networks
- enables transition from an outdoor cable to an indoor one
- designed to be installed on the facades of single-family houses
- available in version with or without a patching field
- latch locked lid

EQUIPMENT:

- 12 fibre capacity
- adapter plate for 4 adapters
- cable ties and brackets
- lock (optional)
- installation and handling instruction
- installation kit

TECHNICAL SPECIFICATIONS:

	PS-CCS-1
maximum number of splices	12
number of patching fields	typically 4, maximum 6
recommended pigtail length [m] 0.9 mm	2.5
number of bottom cable/duct entries	2 pcs for cables of up to 16 mm diameter
number of rear cable/duct entries	2 pcs for cables of up to 5 mm diameter
dimensions: width/height/depth [mm]	130/190/45
weight [kg]	0.5
colour	RAL 7035
housing material	polycarbonate
mechanical IK protection	IK08
environmental IP protection	IP54

ORDERING:

PS-CCS-1 - Wall-Mounted Splice Closure/Cross-Connect Splice Box with patching field for four SC/E-2000 adapters, latch locked lid (does not include a lock)

FTTx PON

OPTOCODE J1100

NMS-6 OUTDOOR SPLICE CLOSURE/OPTICAL CROSS - CONNECT SPLICE BOX

FEATURES:

- distribution/splice box, advised for using in FTTH networks
- enables transition from an outdoor cable to an indoor one
- designed to be mounted on the facades of single-family houses
- lockable
- capacity for up to 6 fibre splices

EQUIPMENT:

- case with a lock
- cable ties and brackets
- installation and handling instruction
- installation kit

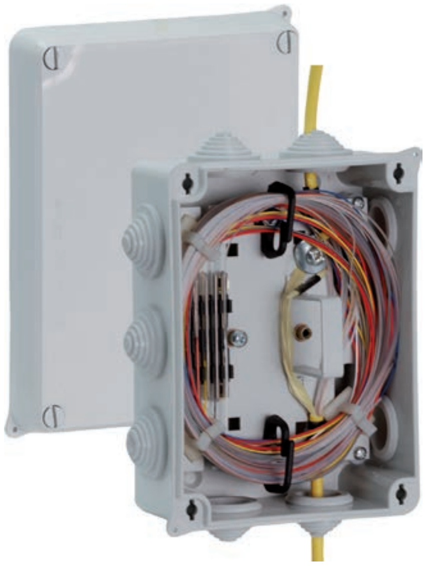
TECHNICAL SPECIFICATIONS:

	NMS-6
maximum number of splices	6
number of cable entries	10 pcs for cables of up to 11 mm diameter
number of rear cable/duct entries	2 pcs for cables of up to 5 mm diameter
dimensions: width/height/depth [mm]	120/170/70
colour	RAL 7035
weight [kg]	0.3
housing material	polycarbonate
mechanical IK protection	IK08
environmental IP protection	IP54

ORDERING:

NMS-DIN-6 - Wall-Mounted Optical Fibre Splice Box, capacity for 6 optical fibre splices

FTTx PON



Outdoor Splice Closure/Optical Cross-Connect Splice Box NMS-6

CABLING WITHIN CUSTOMER APARTMENT

An optical fibre is an element, which until recently, has not been present in subscriber's apartment. Lack of users' proper knowledge concerning the operation and usage of optical fibres, makes this part of a network the most prone for damages and simultaneously enforces requirements for equipment.

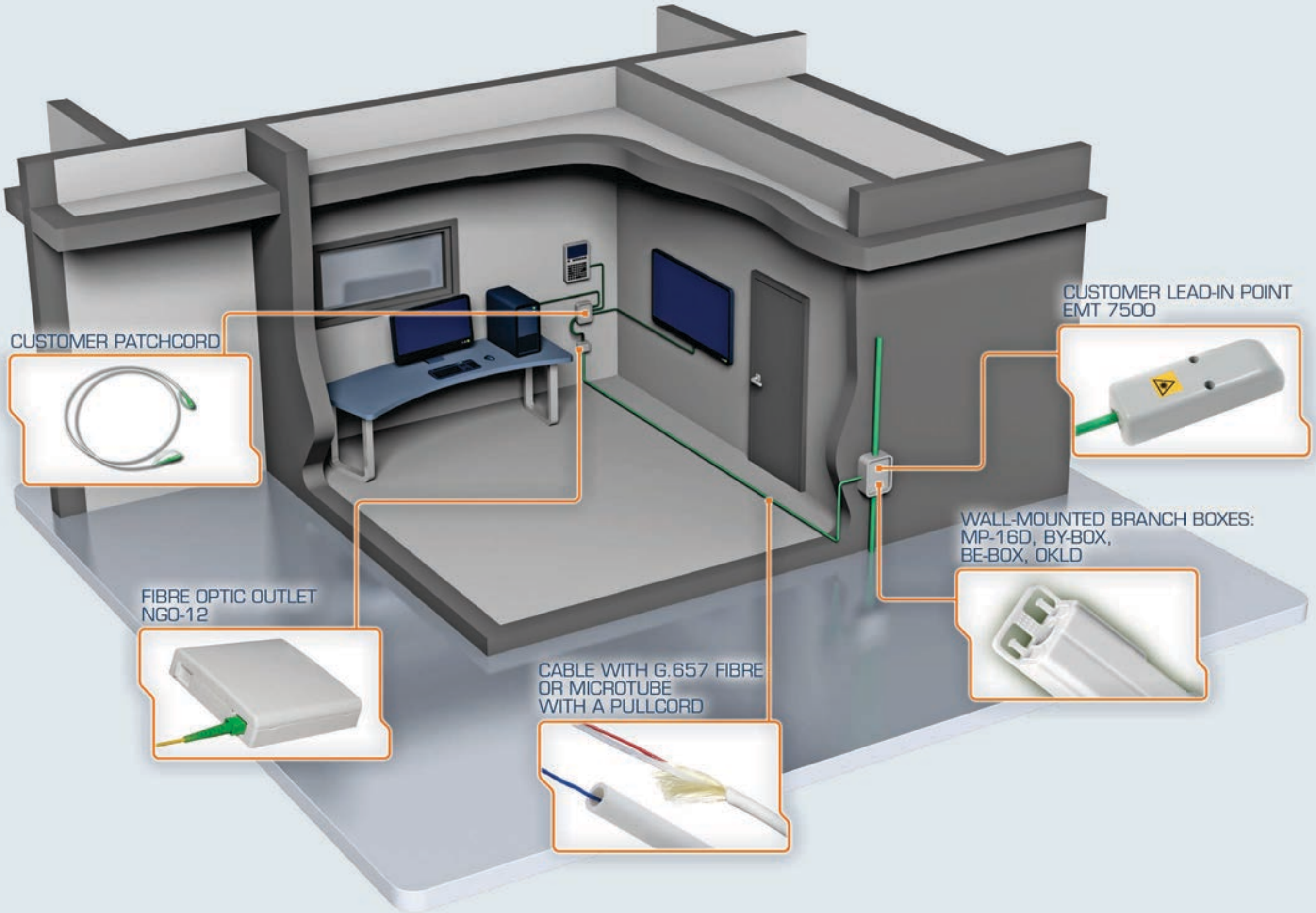
The choice of deploying cabling in subscriber's house or apartment, in a significant way is reflected in parameters and reliability of a network. Many opertators and producers of optical equipment recommend to connect clients with the aid of connectors and mechanical splices. Apart from precise optical fibre cutter, no special tools are required to mount such elements, which should simplify procedure of cabling and decrease its costs.. The drawbacks of such a solution are higher insertion loss, worse return loss and decreasing with time network parameters. Because of that, it is advised to deploy cables in subscriber's apartment with the aid of factory made pigtails and patchcords, connected with the distribution infrastructure by traditional splices.

Inside buildings, it is advised to employ cables with G.657 bend insensitive fibre, non-flammable, Low Smoke Zero Halogen. In contrast to the standard optical fibres, G.657 fibres enable convenient deployment of optical cable and low bending radii in apartment corners, edges etc. without significant signal loss.

The critical point of an optical network is a fibre optic outlet in subscriber's apartment. In order to protect the user against harmful laser radiation and secure detachable connections from possible contamination, which may lead to significant increase of transmission loss, it is advised to employ wall-mounted fibre optic outlet NGO-12. They are equipped with an integrated adapter shutter, automatically closing when a connector is removed from the outlet.
Fibre outlet NGO-12 features aesthetical appearance, small dimensions and is intended for mounting directly on a wall or on a recessed box of 60 mm diameter.

Minimization of workload and time necessary for performing installation in client's apartment while keeping the best parameters can be achieved by using OPTOMER connection kit. Such a kit consists of factory preinstalled SC/APC pigtail in NGO-12 outlet. Connecting a client is based on mounting the optical outlet on apartment's wall, uncoiling and deploying the cable coming out of it and performing spliced connection with distribution network.

CABLING WITHIN CUSTOMER APARTMENT


CUSTOMER LEAD-IN POINT
EMT 7500
CUSTOMER PATCHCORD
WALL-MOUNTED BRANCH BOXES:
MP-16D, BY-BOX,
BE-BOX, OKLD
FIBRE OPTIC OUTLET
NGO-12
CABLE WITH G.657 FIBRE
OR MICROTUBE
WITH A PULLCORD

Passive Optical Network at client's apartment

NGO-12 WALL-MOUNTED FIBRE OPTIC OUTLET

OPTOCODE J1110

Wall-Mounted Fibre Optic Outlet NGO-12

FEATURES:

- network termination in customer's apartment
- installed directly on the wall or on flush-mounting box ɸ60
- maximum capacity: 2 SC connectors or 4 LC connectors, 2 splice protectors
- access to adapters protected by automatically closing shutters

EQUIPMENT:

- installation and handling instruction
- installation kit
- optionally with an adapter and pigtail

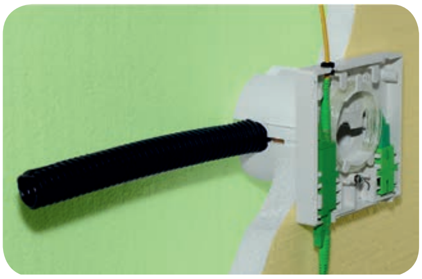
TECHNICAL SPECIFICATIONS:

	NGO-12
maximum number of splices	2
number of patching fields	2 (SC, E-2000, F-3000), 4 (LC Duplex)
total pigtail spare length (0.9 mm buffered fibre) [m]	3
dimensions: width/height/depth [mm]	86/86/20
weight [kg]	0.06
housing material	ABS V0
colour	RAL 9016
mechanical IK protection	IK08
environmental IP protection	IP54

ORDERING:

NGO-12-1SCA- Wall-Mounted Fibre Optic Outlet, equipped with 1 pigtail and SC/APC adapter

FTTx PON



Wall-Mounted Fibre Optic Outlet NGO-12

OPTOCODE J1120

SUBSCRIBER PIGTAIL WITH G.657 A2 FIBRE

FEATURES:

- pigtail with G.657 A2 bend insensitive fibre
- designed to match the requirements of FTTH network
- available in one or two fibre version, or as a patchcord
- perfect for direct connection of subscribers
- enables deployment through walls and floors
- for glueing or attaching with nail-in clips
- halogen free coating LSOH, in accordance with international fire safety requirements

TECHNICAL SPECIFICATIONS:

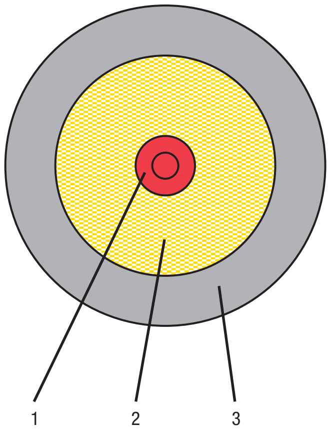
		1-fibre cable	2-fibre cable
temperature range [°C]:	transport and storage	-40 to +70	
	installation	-5 to +50	
	operation	-30 to +70	
maximum pulling force [N]		200	
crush resistance [N/cm]		100	
minimum bending radius [mm]		20	
standard packaging		coils of 250 m	
nominal diameter [mm]		4	
minimum coating thickness [mm]		0.8	
flame retardancy		CEI60332-1 (C2)	
nominal weight [kg/km]		16	18
marking of outer sheath		manufacturing year and week - ACOME - fibre count and type - product code + metre marks	

ORDERING:

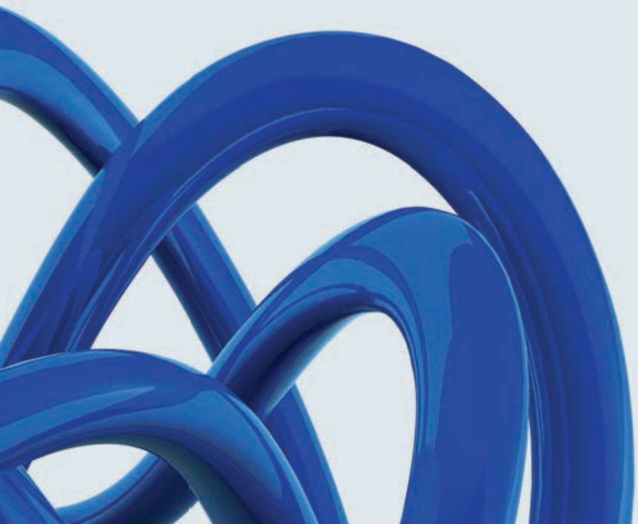
SCA/24/SM/657/1J/LFH – SM SC/APC 24 m pigtail, G.657 A2 fibre, 4 mm outer diameter, LFH material

FTTx PON

Structure of the subscriber's cable



1. *one or two G.657 bend insensitive fibres, 900 µm buffered*
2. *waterproof reinforcement with aramid yarn*
3. *halogen free coating (LSOH)*



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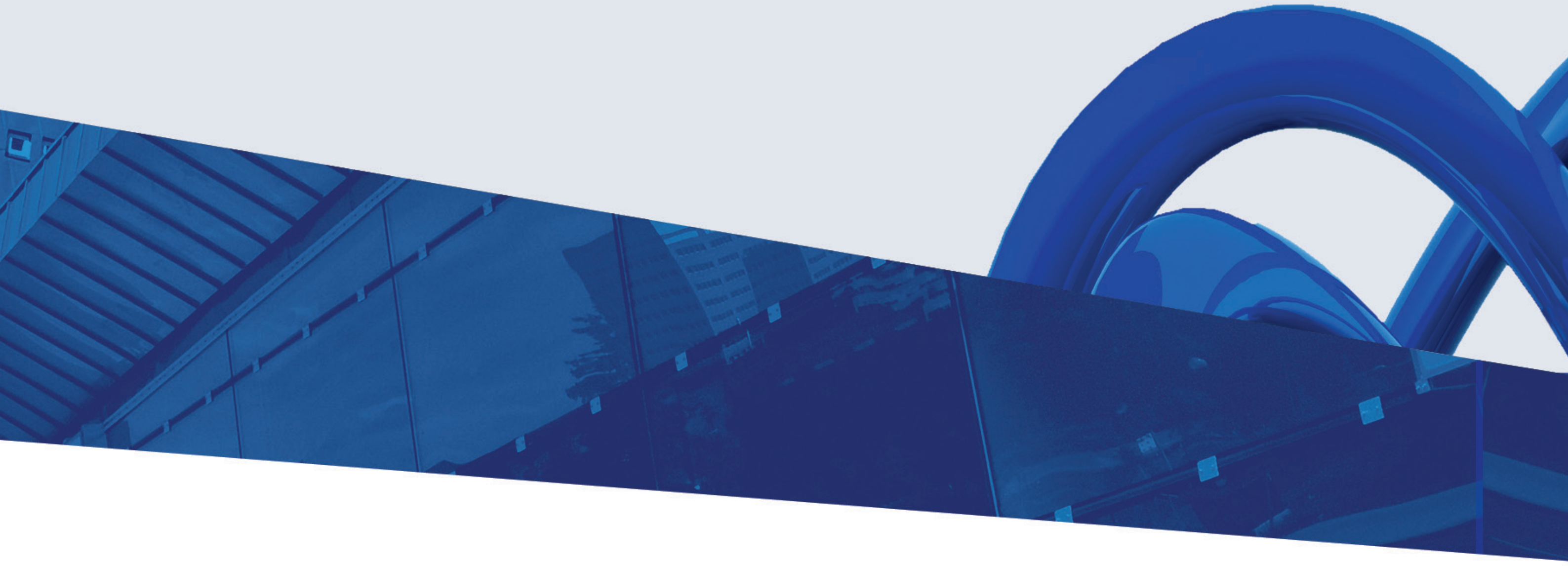


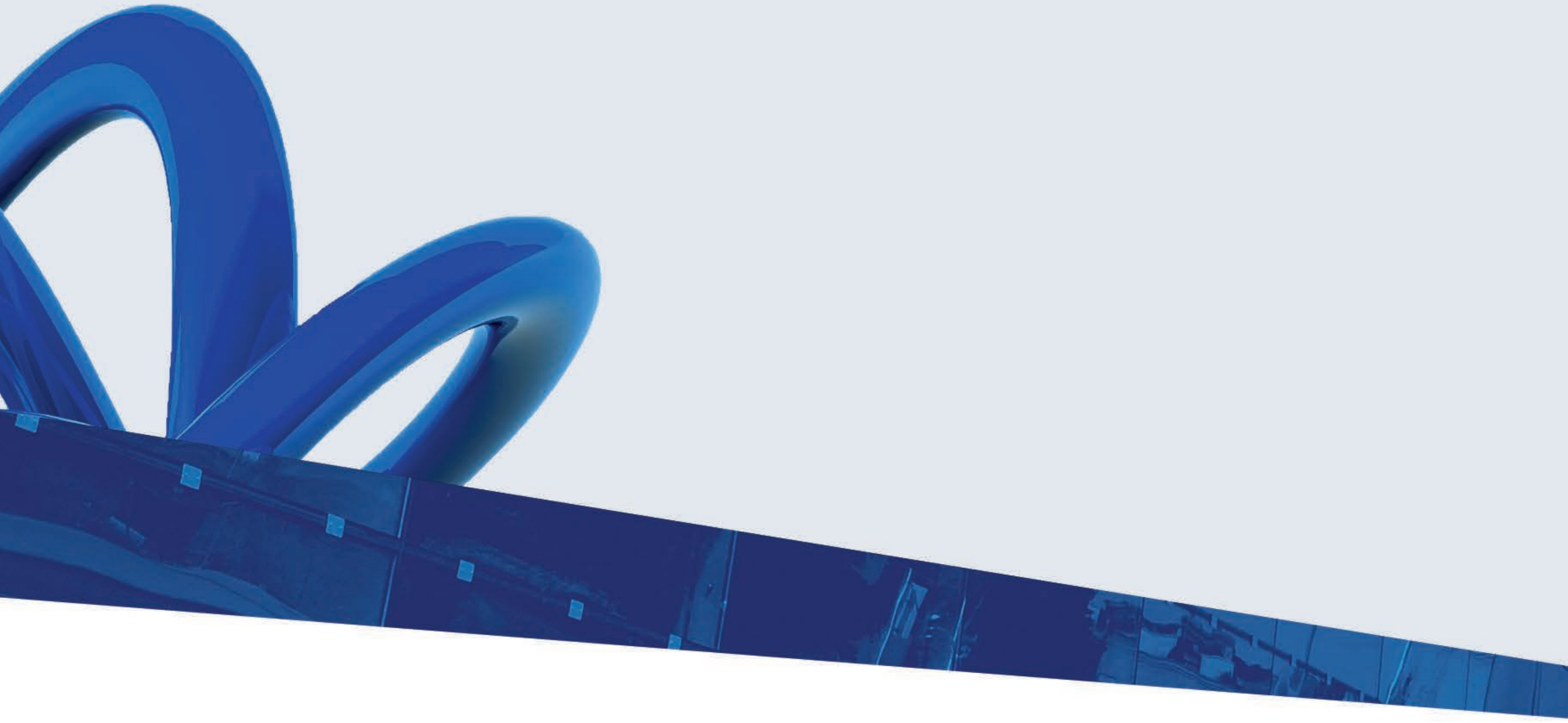
The telecommunication infrastructure modernisation and miniaturisation is a continuous process. The traditional, expensive large diameter cable ducts are replaced with microducts.

The basic element of each microduct is a polyethylene microtube. In most cases the inside of the microtube is longitudinally grooved and covered with silicone layer to minimize the friction coefficient. Two types of microtubes are available: thin-walled requiring the additional external protection and thick-walled for direct burial. The typical diameters of the thin-walled microducts are: 5/3, 5 mm,10/8 mm, 12/10 mm, the diameter range of thick-walled microducts are: 7/3, 5 mm, 12/8 mm, 14/10 mm. Microtubes are formed into bundles dedicated for installation in existing ducts, direct burial or aerial installation.

Depending on the inner diameter the microtubes accept fibre units with the fibre capacity from 2 to 12 fibres or minicables with the capacity of up to 144 fibres. The inner microduct diameter of 3.5 mm is dedicated for blowing fibre units containing 2 to 12 optical fibers. The inner microduct diameters of 8 mm or 10 mm are dedicated for blowing 12 to 144 fibre minicables.

This chapter presents a complete microduct system along with tools and accessories for microduct and cable preparation, installation and blowing. We provide full technical support including design and installation principles of blown fibre systems.

MICRODUCTS



FIBRE UNITS 124
MINICABLES 125
DIRECT BURY METAL-FREE MICRODUCTS DBMF 126
PRIMARY MICROTUBES 1DBMF 127
HEAVY-WALL MICRODUCT BUNDLES DBMF 128
HEAVY-WALL TUBE BUNDLES DBMF 129
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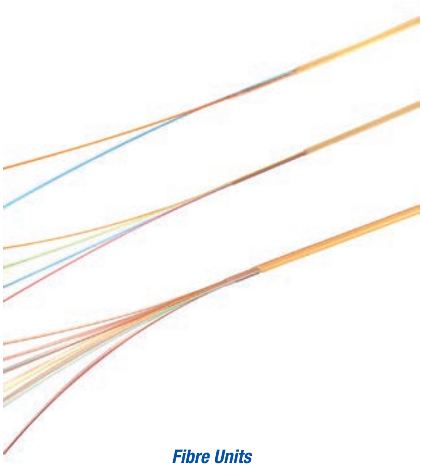
NARZĘDZIA DODATKOWE 141

FIBRE UNITS

OPTOCODE L1010



Fibre Units

FEATURES:

- compatible with industry-standard blowing equipment
- optimised for blowing
- certified to be used in various projects all over the world
- hybrid fibre units with different fibre types: singlemode, multimode, mechanical fibres
- fibre units with standard lengths preconnectorised on one end (Pre-Connect)
- easy to use and handle, highly durable

TECHNICAL SPECIFICATIONS:

	2 fibre unit	4 fibre unit	6 fibre unit	8 fibre unit	12 fibre unit
diameter [mm]	1,1	1,1	1,3	1,5	1,6
weight [g/m]	1,0	1,0	1,6	1,8	2,2
breakout time	typically 2 minutes for 3 m of fibre unit				
blowing distance [m]	typically 1400				
fibre count	2 + 2 mechanical fibres as ripcords	4	6	8	12
fibre colours	blue, orange	blue, orange, green, red	blue, orange, green, red, grey, yellow	blue, orange, green, red, grey, yellow, brown, violet	blue, orange, green, red, grey, yellow, brown, violet, black, aqua, pink, white
packaging	fibre rosette into pan				
fibre types+	single mode ITU-T G.652d				
	single mode ITU-T G.657a				
	single mode ITU-T G.655				
	mullti mode 62,5/125 OM1				
	mullti mode 50/125 OM2, OM3, OM4				

microduct size (outer/inner) [mm]	fibre unit fibre count				
	2	4	6	8	12
3,0/2,1	√	√	-	-	-
5,0/3,5	√	√	√	√	√
8,0/6,0	√	√	√	√	√

fibre unit fibre count	single mode fibres ITU-T			multimode fibres ITU-T			
	G.652.d	G.657A1	G.655	62,5/125 OM1	50/125 OM2	50/125 OM3	50/125 OM4
2	EMT-9032	EMT-9506	-	EMT-9021	EMT-7653	EMT-9058	EMT-9180
4	EMT-7590	EMT-9507	-	EMT-7578	EMT-7577	EMT-6669	EMT-9181
6	EMT-90024	-	-	-	-	-	-
8	EMT-7589	EMT-9509	-	EMT-7580	EMT-7583	EMT-6668	EMT-9182
12	EMT-7575	EMT-9510	EMT-9179	EMT-7582	EMT-7581	EMT-7714	EMT-9013
generic specification	MHT1201	MHT2185	MHT1202	MHT1203			

ORDERING:

EMT-9510 - fibre unit, 12 x G.657A1 fibre

TELECOM ACCESS CATV LAN FTTx PON Industry

OPTOCODE L1020

MINICABLES

FEATURES:

- fibre count, small outer dimeter
- compatible with industry-standard blowing equipment
- optimised for blowing
- certified to be used in various projects all over the world
- quick installation
- metal-free construction

TECHNICAL SPECIFICATIONS:

	24 J	48 J	60 J	72 J	96 J	144 J
diameter [mm]	5,8				6,5	7,9
weight [kg/km]	30				33	43
nominal bending radius [mm]	130					160
blowing distance [m]	typically 2000					
fibre count	24	48	60	72	96	144
fibre type	SM G.652d					
minimum order quantity [m]	4000					

microduct diameter [mm]	minicable					
	24 J	48 J	60 J	72 J	96 J	144 J
10,0/8,0	√	√	√	√	-	-
12,0/9,4	√	√	√	√	√	√

Minicables

MECHANICAL PARAMETERS:

fibre capacity	24-72	96	144
configuration	6x12 fibre tube	8x12 fibre tube	6x24 fibre tube
nominal outer diameter [mm]	6,1	6,6	7,9
nominal weight [kg/km]	30	33	43
maximum tensile load during operation [N]	300	200	300
maximum tensile load during intallation [N]	350	200	300
crush resistance [N]	1000	800	1000
nominal bending radius [mm]	130	130	160
minimum microduct inner diameter [mm]	8	10	10

ORDERING:

EMT-SM144G.652D - minicable, 144 single mode G.652D fibre

TELECOM CATV MAN WAN LAN FTTx PON Industry

DIRECT BURY METAL-FREE MICRODUCTS DBMF

OPTOCODE L1030

DBmf Microducts

FEATURES:

- direct bury microduct
- polyethylene tube bundle assembly
- outer protective tough direct-burial grade HDPE sheath
- low friction interior silicone coating
- the tube bundle is surrounded by water blocking material, black flexible PE sheath and outer orange direct-burial grade HDPE
- metal-free

TECHNICAL SPECIFICATIONS:

product code	description	microduct outer/inner diameter [mm]	supply length [m]	minimum order quantity [m]	generic specification	weight [g/m]	drum			total weight [kg]
							type	dimensions (outer diameter/width) [mm]	weight [kg]	
EMT-8361T	2DBmf	3/2,1	2000	4000	MHT2156	99	G	1200/730	200	398
EMT-8362T	4 DBmf	3/2,1	4000	4000	MHT2156	130	1.4D	1400/1150	280	800
EMT-8363T	7 DBmf	3/2,1	4000	4000	MHT2156	157	1.4D	1400/1150	280	908
EMT-8364T	12 DBmf	3/2,1	4000	4000	MHT2156	207	2.0D	2000/1150	400	1228
EMT-8365T	19 DBmf	3/2,1	4000	4000	MHT2156	256	2.0D	2000/1150	400	1424
EMT-8247T	24 DBmf	3/2,1	2000	4000	MHT2156	320	1.7D	1700/1150	360	880
EMT-8233T	1 DBmf	5/3,5	4000	4000	MHT2156	62	coil	600/300	0	31
EMT-8217T	2 DBmf	5/3,5	4000	4000	MHT2156	145	G	1200/730	200	490
EMT-8218T	4 DBmf	5/3,5	4000	4000	MHT2156	203	1.7D	1700/1150	360	1172
EMT-8219T	7 DBmf	5/3,5	4000	4000	MHT2156	262	2.0D	2000 /1150	400	1448
EMT-8220T	12 DBmf	5/3,5	4000	4000	MHT2156	389	2.35D	1700/1150	600	2156
EMT-8221T	19 DBmf	5/3,5	3000	3000	MHT2156	500	2.35D	1700/1150	600	2100
EMT-8222T	24 DBmf	5/3,5	4000	4000	MHT2156	637	2.2D	2200/1150	500	1774
EMT-8239T	1 DBmf	10/8	4000	4000	MHT1743	184	MB5	1200 /1000	225	593
EMT-60208	2 DBmf	10/8	4000	4000	MHT1805	261	1.4D	1400/1150	280	750
EMT-60209	4 DBmf	10/8	4000	4000	MHT1805	480	2.0D	2000/1150	400	1325
EMT-60211	7 DBmf	10/8	4000	4000	MHT1805	650	2.2D	2200/1150	500	1720
EMT-60212	2 DBmf	12/10	4000	4000	MHT1805	309	1.7D	1700/1150	360	980
EMT-60213	4 DBmf	12/10	4000	4000	MHT1805	505	2.2D	2200/1150	500	1420
EMT-60144	7 DBmf	12/10	4000	4000	MHT1805	684	2.0D	2000/1150	400	1084

MECHANICAL PARAMETERS:

type	microduct outer/inner diameter [mm]	microduct bundle outer diameter [mm]	minimum bending radius [mm]	maximum pulling force		generic specification
				kG	N	
2DBmf	3/2,1	13,3 x 10,3	150	55	550	MHT2156
4DBmf	3/2,1	14,5	220	70	700	MHT2156
7DBmf	3/2,1	16,3	240	85	850	MHT2156
12DBmf	3/2,1	19,5	290	110	1100	MHT2156
19DBmf	3/2,1	21,9	330	140	1400	MHT2156
24DBmf	3/2,1	25,3	380	170	1700	MHT2156
1DBmf	5/3,5	10	150	25	250	MHT2156
2DBmf	5/3,5	12,3/17,3	185	75	750	MHT2156
4DBmf	5/3,5	19,4	300	110	1100	MHT2156
7DBmf	5/3,5	22,3	335	140	1400	MHT2156
12DBmf	5/3,5	28,1	425	210	2100	MHT2156
19DBmf	5/3,5	32,1	550	270	2700	MHT2156
24DBmf	5/3,5	37,7	645	350	3500	MHT2156
1DBmf	10/8	17,7	270	100	1000	MHT1743
2DBmf	10/8	17,3/27,3	260	140	1400	MHT1805
4DBmf	10/8	31,9	480	230	2300	MHT1805
5DBmf	10/8	34,4	520	260	2600	MHT1805
7DBmf	10/8	37,8	650	310	3100	MHT1805
2DBmf	12/10	19,1/31,1	290	240	2400	MHT1805
4DBmf	12/10	36,8	630	400	4000	MHT1805
5DBmf	12/10	39,8	680	480	4800	MHT1805
7DBmf	12/10	43,8	750	560	5600	MHT1805

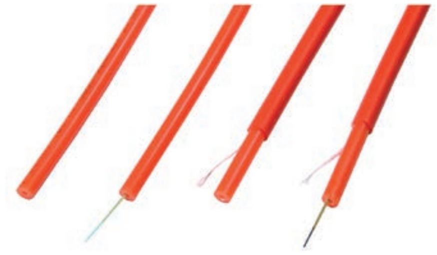
TELECOM CATV MAN WAN FTTx PON

OPTOCODE L1035

PRIMARY MICROTUBES 1DBMF

FEATURES:

- available with one or two protective sheaths
- flexible and durable
- ideal for building FTTH networks
- applicable in closure-less system
- available with preinstalled fibres
- metal-free construction



Primary Microducts 1DBmf

TECHNICAL SPECIFICATIONS:

product code	description	microduct outer/inner diameter [mm]	supply length [m]	minimum order quantity [m]	generic specification	weight [g/m]	drum			total weight [kg]
							type	dimensions (outer diameter/width) [mm]	weight [kg]	
EMT-8233T	1DBmf	5/3,5	500	4000	MHT 2156	62	coil	600/300	0	31
EMT-8239T	1DBmf	10/8	2000	4000	MHT 1743	184	MB5	1200/1000	225	593
EMT-8351T	1DBmf heavy-wall	5/2,1	500	4000	MHT 1281	74	coil	600/300	0	37
EMT-8470	1DBmf heavy-wall	8/3,5	2000	4000	MHT 2059	38	HH	1000/500	65	141
EMT-8477	1DBmf heavy-wall	8/3,5 + sheath	3000	3000	MHT 2059	67	G	1200/730	200	401
EMT-8506	1DBmf heavy-wall	14/10	1000	4000	MHT 2308	73	HH	1000/400	65	138
EMT-8476	1DBmf with preinstalled fibre unit	8/3,5 + 2 fibre units	2000	4000	MHT 2059	39	800ply	800/300	12	90
EMT-8497	1DBmf with preinstalled fibre unit	8/3,5 + 4 fibre units	2000	4000	MHT 2059	39	800ply	800/300	12	90

MECHANICAL PARAMETERS:

type	microduct outer/inner diameter [mm]	sheath outer diameter if applied [mm]	minimal bending radius [mm]	maximum pulling force		generic specification
				kG	N	
1DBmf	5,0/3,5	10	150	25	250	MHT2156
1DBmf	10,0/8,0	17,7	270	100	1000	MHT1743
1DBmf heavy-wall	5,0/2,1	10	130	40	400	MHT1281
1DBmf heavy-wall	8,0/3,5	8	80	25	250	MHT2059
1DBmf heavy-wall	8,0/3,5 + sheath	10	100	40	400	MHT2059
1DBmf heavy-wall	14,0/10,0	14	210	50	500	MHT2308

ORDERING:

EMT-8213T - direct bury primary tube 5/3.5 mm, metal-free, 4000 m coil

TELECOM ACCESS LAN FTTx PON

HEAVY-WALL MICRODUCT BUNDLES DBMF

OPTOCODE L1040

Heavy-wall microducts DBmf

FEATURES:

- simple and strong heavy-wall microduct construction
- exceptional toughness and crush resistance
- both microduct and individual tubes can be directly buried
- compatible with closure-less system
- quick and easy installation
- low installation costs

TECHNICAL SPECIFICATIONS:

product code	description	microduct outer/inner diameter [mm]	supply length [m]	minimum order quantity [m]	weight [g/m]	drum			total weight [kg]
						type	dimensions (outer diameter/width) [mm]	weight [kg]	
EMT-8351T	1DBmf	5/2,1	500	4000	74	coil	600/300	-	37
EMT-60172	2DBmf	7/3,5	4000	4000	97	MB5	1200/1000	225	613
EMT-60173	4DBmf	7/3,5	4000	4000	170	1.7D	1700/1150	360	1040
EMT-60174	7DBmf	7/3,5	4000	4000	266	2.0D	2000/1150	400	1464
EMT-60175	12DBmf	7/3,5	3000	3000	429	2.2D	2200/1150	500	1787
EMT-60176	19DBmf	7/3,5	2000	3000	640	2.2D	2200/1150	500	1780
EMT-60177	24DBmf	7/3,5	1000	4000	860	2.0D	2000/1150	400	1260
EMT-60179	2DBmf	7/4	4000	4000	91	MB5	1200/1000	225	589
EMT-60180	4DBmf	7/4	4000	4000	159	1.7D	1700/1150	360	996
EMT-60181	7DBmf	7/4	4000	4000	247	2.0D	2000/1150	400	1388
EMT-60182	12DBmf	7/4	3000	3000	395	2.2D	2200/1150	500	1685
EMT-60183	19DBmf	7/4	2000	4000	587	2.2D	2200/1150	500	1674
EMT-60184	24DBmf	7/4	1000	4000	793	2.0D	2000/1150	400	1193
EMT-8470	1DBmf	8/3,5	2000	4000	38	HH	1000/500	65	141
EMT-8477	1DBmf	8/3,5 + sheath	3000	3000	67	G	1200/730	200	401
EMT-60200	2DBmf	10/6	2000	4000	150	MB5	1200/1000	225	525
EMT-60351	3DBmf	10/6	2000	4000	218	1.4D	1400/1150	280	716
EMT-60202	4DBmf	10/6	2000	4000	266	1.7D	1700/1150	360	892
EMT-60203	7DBmf	10/6	2000	4000	430	2.0D	2000/1150	400	1260
EMT-60015	2DBmf	12/8	2000	4000	184	MB5	1200/1000	225	593
EMT-60016	3DBmf	12/8	2000	4000	267	1.4D	1400/1150	280	814
EMT-60017	4DBmf	12/8	2000	4000	347	2.0D	2000/1150	400	1094
EMT-60018	5DBmf	12/8	2000	4000	434	2.2D	2200/1150	500	1368
EMT-60019	6DBmf	12/8	2000	4000	465	2.2D	2200/1150	500	1430
EMT-60020	7DBmf	12/8	2000	4000	531	2.2D	2200/1150	500	1562
EMT-8506	1DBmf	14/10	1000	4000	73	HH	1000/400	65	138
EMT-8524	2DBmf	14/10	1000	4000	215	MB5	1200/1000	225	440
EMT-8499	3DBmf	14/10	1000	4000	314	1.4D	1400/1150	280	594
EMT-60022	4DBmf	14/10	1000	4000	391	1.4D	1400/1150	280	671
EMT-60023	5DBmf	14/10	1000	4000	507	2.0D	2000/1150	400	907
EMT-60353	6DBmf	14/10	1000	4000	561	2.0D	2000/1150	400	961
EMT-8468	7DBmf	14/10	1000	4000	631	2.0D	2000/1150	400	1031
EMT-60722	2DBmf	16/12	1000	4000	249	MB5	1200/1000	225	474
EMT-60723	3DBmf	16/12	1000	4000	363	1.7D	1700/1150	360	723
EMT-60724	4DBmf	16/12	1000	4000	447	2.0D	2000/1150	400	847
EMT-60725	5DBmf	16/12	1000	4000	580	2.0D	2000/1150	400	980
EMT-60726	6DBmf	16/12	1000	4000	642	2.2D	2200/1150	500	1142
EMT-60727	7DBmf	16/12	1000	4000	736	2.2D	2200/1150	500	1236

OPTOCODE
L1040

HEAVY-WALL TUBE BUNDLES DBMF

Heavy-wall microducts DBmf

MECHANICAL PARAMETERS:

type	microduct outer diameter [mm]	microduct inner diameter [mm]	microduct bundle outer diameter [mm]	minimum bending radius [mm]	maximum pulling force		generic specification
					kG	N	
1DBmf	5	2,1	10	130	40	400	MHT1281
2DBmf	7	3,5	9,2/16,4	160	65	650	MHT2309
4DBmf	7	3,5	19,1	330	120	1200	MHT2309
7DBmf	7	3,5	23,2	400	180	1800	MHT2309
12DBmf	7	3,5	30,7	530	300	3000	MHT2309
19DBmf	7	3,5	36,2	620	450	4500	MHT2309
24DBmf	7	3,5	44,2	750	600	6000	MHT2309
2DBmf	7	4	9,2/16,4	160	60	600	MHT2309
4DBmf	7	4	19,1	330	110	1100	MHT2309
7DBmf	7	4	23,2	400	170	1700	MHT2309
12DBmf	7	4	30,7	530	280	2800	MHT2309
19DBmf	7	4	36,2	620	410	4100	MHT2309
24DBmf	7	4	44,2	750	560	5600	MHT2309
1DBmf	8	3,5	8	80	25	250	MHT2059
1DBmf	8	3,5 + sheath	10	100	40	400	MHT2059
2DBmf	10	6	12/22	200	80	800	MHT1563
3DBmf	10	6	12/32	200	100	1000	MHT1563
4DBmf	10	6	26,1	3800	120	1200	MHT1563
7DBmf	10	6	32	540	240	2400	MHT1563
2DBmf	12	8	14/26	220	90	900	MHT1564
3DBmf	12	8	14/38	220	140	1400	MHT1564
4DBmf	12	8	31	440	180	1800	MHT1564
5DBmf	12	8	34,4	600	240	2400	MHT1564
6DBmf	12	8	38	600	260	2600	MHT1564
7DBmf	12	8	38	650	280	2800	MHT1564
1DBmf	14	10	14	210	50	500	MHT2308
2DBmf	14	10	30/16	240	120	1200	MHT2308
3DBmf	14	10	44/16	240	170	1700	MHT2308
4DBmf	14	10	36 across corners	500	200	2000	MHT2308
5DBmf	14	10	40 across corners	700	270	2700	MHT2308
6DBmf	14	10	44 across corners	750	300	3000	MHT2308
7DBmf	14	10	44 across corners	750	350	35000	MHT2308
2DBmf	16	12	34/18	180	160	160	MHT2432
3DBmf	16	12	50/18	180	240	2400	MHT2432
4DBmf	16	12	41 across corners	570	300	3000	MHT2432
5DBmf	16	12	45,5 across corners	770	380	3800	MHT2432
6DBmf	16	12	50 across corners	850	430	4300	MHT2432
7DBmf	16	12	50 across corners	850	480	4800	MHT2432

ORDERING:

EMT-60174 - Direct Bury 7 x 7/3.5 mm tube bundle, metal-free, 4000 m drum

TELECOM CATV MAN WAN FTTx PON

DIRECT BURY MICRODUCTS DB

OPTOCODE L1050

FEATURES:

- direct bury microduct
- surrounded with a 125µm aluminium layer, bonded inside a sheath of flexible black PE
- heavy duty orange coloured HDPE outer sheath
- pre-installed rip cords under the sheath to rip through the aluminium layer and both polyethylene sheaths

TECHNICAL SPECIFICATIONS:

product code	description	microduct outer/inner diameter [mm]	supply length [m]	minimum order quantity [m]	weight [g/m]	drum			total weight [kg]
						type	dimensions (outer diameter/width) [mm]	weight [kg]	
EMT-6627	1DB	5/3,5	4000	4000	72	MB5	1200/1000	225	513
EMT-6406	2DB	5/3,5	4000	4000	159	1.4D	1400/1150	280	916
EMT-6375	4DB	5/3,5	4000	4000	216	1.7D	1700/1150	360	1224
EMT-6314	7DB	5/3,5	4000	4000	278	2.0D	2000/1150	400	1512
EMT-6556	12DB	5/3,5	4000	4000	411	2.35D	2350/1150	600	2244
EMT-6352	19DB	5/3,5	3000	3000	526	2.35D	2350/1150	600	2178
EMT-6557	24DB	5/3,5	2000	4000	671	2.2D	2200/1150	500	1842
EMT-6893	1DB	10/8	2000	4000	185	MB5	1200/1000	225	595
EMT-6798	2DB	10/8	2000	4000	285	1.7D	1700/1150	360	930
EMT-6655	4DB	10/8 (round)	2000	4000	450	2.35D	2350/1150	600	1500
EMT-6593	7DB	10/8	2000	4000	606	2.35D	2350/1150	-	1812
EMT-60152	12DB	10/8	1000	4000	946	2.2D	2200/1150	500	1446
EMT-60360	1DB	12/10	2000	4000	205	MB5	1200/1000	225	635
EMT-60361	2DB	12/10	2000	4000	331	1.7D	1700/1150	360	1022
EMT-60736	4DB	12/10 (round)	2000	4000	542	2.2D	2200/1150	500	1584
EMT-60365	7DB	12/10	1000	4000	726	2.0D	2000/1150	400	1126

MECHANICAL PARAMETERS:

type	microduct outer/inner diameter [mm]	microduct bundle outer diameter [mm]	minimum bending radius [mm]*	maximum pulling force		generic specification
				kG	N	
1DB	5/3,5	10	150/100	50	500	MHT113
2DB	5/3,5	12,2/17,2	190/120	120	1200	MHT113
4DB	5/3,5	19,3	300/200	160	1600	MHT113
7DB	5/3,5	22,2	350/240	200	2000	MHT113
12DB	5/3,5	28,2	430/310	280	2800	MHT113
19DB	5/3,5	32,2	550/360	400	4000	MHT113
24DB	5/3,5	37,8	650/500	500	5000	MHT113
1DB	10/8	17,2	260/180	130	1300	MHT167
2DB	10/8	17,2/27,2	260/180	200	2000	MHT167
4DB	10/8	31,9	540/370	300	300	MHT167
7DB	10/8	37,8	640/430	400	4000	MHT167
12DB	10/8	49,5	940/660	600	6000	MHT167
1DB	12/10	19,1	280/200	150	1500	MHT167
2DB	12/10	19,1/31,1	280/200	240	2400	MHT167
4DB	12/10	36,8	630/500	400	4000	MHT167
7DB	12/10	43,8	750/600	550	5500	MHT167

* - the second bending radius applies to microduct without outer sheath

DB Microduct

ORDERING:

EMT-6314 - Direct Bury 7 x 5/3.5 mm tube bundle, 4000 m drum

TELECOM CATV MAN WAN FTTx PON

OPTOCODE L1060

DIRECT INSTALL MICRODUCTS DI

FEATURES:

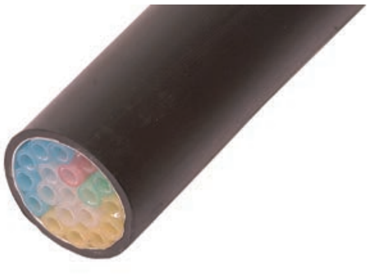
- direct installation
- surrounded with a 150µm aluminium layer, bonded inside an outer sheath flexible black PE
- flexible black PE outer sheath
- pre-installed rip cord to rip through the aluminium layer and outer sheath

TECHNICAL SPECIFICATIONS:

product code	description	microduct outer/inner diameter [mm]	supply length [m]	minimum order quantity [m]	weight [g/m]	drum			total weight [kg]
						type	dimensions (outer diameter/width) [mm]	weight [kg]	
EMT-6285	1DI	5/3,53	4000	4000	49	G	1200/730	200	396
EMT-6286	2DI	5/3,5	4000	4000	77	G	1200/730	200	508
EMT-6287	4DI	5/3,5	4000	4000	118	1.4D	1400/1150	280	752
EMT-6438	7DI	5/3,5	4000	4000	162	1.7D	1700/1150	360	1008
EMT-6870	12DI	5/3,5	4000	4000	240	2.0D	2000/1150	400	1360
EMT-6289	19DI	5/3,5	3000	3000	329	2.2D	2200/1150	500	1487
EMT-6701	24DI	5/3,5	2000	4000	437	2.0D	2000/1150	400	1274
EMT-8357	1DI	10/8	2000	4000	98	G	1200/730	200	396
EMT-6797	2DI	10/8	2000	4000	162	MB5	1200/1000	225	549
EMT-6709L	4DI	10/8	2000	4000	262	1.7D	1700/1150	360	884
EMT-6886	7DI	10/8	2000	4000	368	2.0D	2000/1150	400	1136
EMT-60744	1DI	12/10	2000	4000	108	MB5	1200/1000	225	441
EMT-60745	2DI	12/10	2000	4000	178	1.4D	1400/1150	280	636
EMT-60746	4DI	12/10	2000	4000	302	2.0D	2000/1150	400	1004
EMT-60748	7DI	12/10	2000	4000	413	2.35D	2350/1150	600	1426

MECHANICAL PARAMETERS:

type	microduct outer/inner diameter [mm]	microduct bundle outer diameter [mm]	minimum bending radius [mm]	maximum pulling force		generic specification
				kG	N	
1DI	5/3,5	8,4	120	40	400	MHT175
2DI	5/3,5	8,4/13,4	120	60	600	MHT175
4DI	5/3,5	15,5	200	70	700	MHT175
7DI	5/3,5	18,4	240	150	1500	MHT175
12DI	5/3,5	23,8	310	160	1600	MHT175
19DI	5/3,5	27,8	360	250	2500	MHT175
24DI	5/3,5	33,4	500	400	4000	MHT175
1DI	10/8	13,4	180	70	700	MHT888
2DI	10/8	13,4/23,4	180	100	1000	MHT888
4DI	10/8	27,5	370	170	1700	MHT888
7DI	10/8	33,4	500	250	2500	MHT888
1DI	12/10	15,3	200	75	750	MHT888
2DI	12/10	15,3/27,3	200	140	1400	MHT888
4DI	12/10	32,4	500	230	2300	MHT888
7DI	12/10	39,4	600	320	3200	MHT888



DI Microducts

ORDERING:

EMT-6438 - Direct Install 7 x 5/3.5 mm tube bundle, 4000 m drum

TELECOM CATV MAN WAN FTTx PON

LOW FIRE HAZARD MICRODUCTS LFH

OPTOCODE L1070

LFH microduct

FEATURES:

- 5/3.5 mm microduct bundles made of low fire hazard material for indoor fire regulation use
- low friction silicone coating inside
- each tube bundle assembly surrounded with a sheath of low fire hazard material
- suitable for indoor fire regulation use
- excellent performance in fire scenario, meeting IEC 60332-3 and 60332-1
- low flammability
- halogen-free
- low smoke

TECHNICAL SPECIFICATIONS:

product code	description	microduct outer/inner diameter [mm]	supply length [m]	minimum order quantity [m]	weight [g/m]	drum			total weight [kg]
						type	dimensions (outer diameter/width) [mm]	weight [kg]	
EMT-6595	primary tube	5/3,5	4000	4000	15,5	HH	1000/500	65	127
EMT-6634	primary tube	5/3,5	1000	4000	15,5	450 ply	450/250	5	21
EMT-6318	primary tube	5/3,5	500	4000	15,5	350 ply	350/250	5	13
EMT-6772	1LFH	5/3,5	1000	4000	48	700 ply	700/350	10	66
EMT-6403	2LFH	5/3,5	4000	4000	80	G	1200/730	200	520
EMT-6502	2LFH	5/3,5	1000	3000	80	700 ply	700/350	10	90
EMT-6403S	2LFH	5/3,5	500	4000	80	600 ply	600/300	8	48
EMT-6404	4LFH	5/3,5	4000	4000	126	1.4D	1400/1150	280	784
EMT-6643	4LFH	5/3,5	1000	4000	126	HH	1000/500	65	191
EMT-6511	4LFH	5/3,5	500	4000	126	E	850/500	55	118
EMT-6405	7LFH	5/3,5	4000	4000	190	1.7D	1700/1150	360	1120
EMT-6610	7LFH	5/3,5	1000	4000	190	G	1200/730	200	390
EMT-6515	7LFH	5/3,5	500	4000	190	E	850/500	55	150
EMT-6533A	12LFH	5/3,5	4000	4000	310	2.0D	2000/1150	400	1640
EMT-6533	12LFH	5/3,5	1000	4000	310	MB5	1200/1000	225	535
EMT-6533S	12LFH	5/3,5	500	4000	310	F	1000/630	130	285
EMT-6611A	19LFH	5/3,5	4000	4000	438	2.35D	2350/1150	600	2352
EMT-6611	19LFH	5/3,5	1000	4000	438	1.4D	1400/1150	280	718
EMT-6611S	19LFH	5/3,5	500	4000	438	G	1200/730	200	419
EMT-6612L	24LFH	5/3,5	2000	2000	591	2.0D	2000/1150	400	1582
EMT-6612	24LFH	5/3,5	1000	4000	591	1.4D	1400/1150	280	871
EMT-6513	24LFH	5/3,5	500	4000	591	MB5	1200/1000	225	521

MECHANICAL PARAMETERS:

type	microduct outer/inner diameter [mm]	microduct bundle outer diameter [mm]	minimum bending radius [mm]	maximum pulling force		generic specification
				kG	N	
primary tube	5/3,5	-	50	6	60	MHT423
1LFH	5/3,5	7,2	100	15	150	MHT423
2LFH	5/3,5	7,2/12,2	150	25	250	MHT423
4 LFH	5/3,5	12,2/14,3	150	40	400	MHT423
7 LFH	5/3,5	17,2	220	60	600	MHT423
12 LFH	5/3,5	22,9	300	95	950	MHT423
19 LFH	5/3,5	26,9	350	130	1300	MHT423
24 LFH	5/3,5	32,5	500	180	1800	MHT423

ORDERING:

EMT-6405 - Low Fire Hazard Indoor 7 x 5/3.5 mm tube bundle, 4000 m drum

ACCESS CATV LAN FTTx PON

OPTOCODE
L1080

AERIAL FIGURE-8 MICRODUCTS

FEATURES:

- aerial microduct with figure-8 construction
- steel or dielectric strength member
- wide range of tube bundles
- all necessary suspensions and fixtures available

Figure-8 Microduct

TECHNICAL SPECIFICATIONS:

product code	description	microduct outer/inner diameter [mm]	supply length [m]	minimum order quantity [m]	weight [g/m]	drum			total weight [kg]	generic specification
						type	dimensions (outer diameter/width) [mm]	weight [kg]		
EMT-60751	drop microduct	6/2,5	4000	4000	22	E	850/500	55	143	CP418
EMT-60789	drop microduct	6/2,7	3000	3000	26	E	850/500	55	62,8	CP963
EMT-60752	7F8	4/2,7	4000	4000	317	2.0D	2000/1150	400	1668	CP999
EMT-60753	12F8	4/2,7	3000	3000	383	2.0D	2000/1150	400	1549	CP1001
EMT-60754	24F8	4/2,7 + 1x8/6	2000	4000	542	2.2D	2200/1150	500	1584	CP981
EMT-60448	4F8	5/3,5	2000	4000	313	1.4D	1400/1150	280	906	CP870
EMT-8195	7F8	5/3,5	4000	4000	367	2.2D	2200/1150	500	1968	MHT1411
EMT-60107	7F8	5/3,5	1000	4000	367	MB5	1200/1000	225	592	MHT1411
EMT-60755	12F8	5/3,5	2000	4000	453	2.0D	2000/1150	400	1306	CP1030
EMT-60757	17F8	5/3,5 + 1x10/8 combo	1000	4000	576	1.7D	1700/1150	360	936	CP1033
EMT-60756	19F8	5/3,5	2000	4000	549	2.2D	2200/1150	500	1598	CP1031
EMT-60758	7F8	10/8	1000	4000	606	2.0D	2000/1150	400	1006	CP952
EMT-60563	12F8	4/2,5 + 1x12/8	2000	4000	485	2.0D	2000/1150	400	1370	CP968
EMT-60759	7F8	12/10	1000	4000	676	2.0D	2000/1150	400	1076	CP1069
EMT-60662	1F8	14/10	1000	4000	316	MB5	1200/1000	225	541	CP1019

ORDERING:

EMT-60752 - Figure-8 Aerial 7 x 4/2.7 mm tube bundle, 4000 m drum

TELECOM CATV MAN WAN FTTx PON

OPTOCODE
L1080

DIRECT BURY FILLED METAL-FREE MICRODUCTS DBFMF

FEATURES:

- for direct burial, all dielectric
- blongitudinally water blocked
- improved microduct roundness
- protection against kinking and crush
- better handling characteristics in the field once HDPE sheath is removed
- metal-free construction

TECHNICAL SPECIFICATIONS:

product code	description	microduct outer/inner diameter [mm]	supply length [m]	minimum order quantity [m]	weight [g/m]	drum			total weight [kg]	generic specification
						type	dimensions (outer diameter/width) [mm]	weight [kg]		
EMT-8224	3DBfmf	10/8	2000	2000	438	1.7D	1700/1150	360	1326	MHT1844
EMT-8225	4DBfmf	10/8	2000	2000	543	2.0D	2000/1150	400	1486	MHT1844
EMT-8226	5DBfmf	10/8	2000	2000	619	2.0D	2000/1150	400	1638	MHT1844
EMT-8227	7DBfmf	10/8	2000	2000	699	2.2D	2200/1150	500	1898	MHT1844
EMT-60025	3DBfmf	12/10	2000	2000	611	2.0D	2000/1150	400	1622	MHT1844
EMT-60026	4DBfmf	12/10	2000	2000	684	2.2D	2200/1150	500	1868	MHT1844
EMT-60027	5DBfmf	12/10	2000	2000	751	2.35D	2350/1150	600	2102	MHT1844
EMT-60028	7DBfmf	12/10	1000	2000	876	2.0D	2000/1150	400	1276	MHT1844

MECHANICAL PARAMETERS:

type	microduct bundle outer diameter [mm]	nominal bending radius [mm]	maximum pulling force	
			kG	N
3DBfmf	28	420	220	2200
4DBfmf	30,5	520	240	2400
5DBfmf	33,4	570	270	2700
7DBfmf	36,4	620	300	3000
3DBfmf	32,2	550	260	2600
4DBfmf	35,4	600	280	2800
5DBfmf	38,4	650	330	3300
7DBfmf	42,4	700	380	3800

ORDERING:

EMT-8227 - 7 x 10/8 mm direct bury tube bundle, metal-free, 2000 m drum

TELECOM CATV MAN WAN FTTx PON

DBfmf Microduct

DIRECT INSTALL METAL-FREE MICRODUCTS DIMF

OPTOCODE L1100

FEATURES:

- directly installed microducts
- all dielectric, metal-free construction
- outer sheath of flexible black PE
- convenient installation

TECHNICAL SPECIFICATIONS:

product code	description	microduct outer/inner diameter [mm]	supply length [m]	minimum order quantity [m]	weight [g/m]	drum			total weight [kg]	generic specification
						type	dimensions (outer diameter/width) [mm]	weight [kg]		
EMT-8321T	1DImf	5/3,5	4000	4000	47	G	1200/730	200	388	MHT1772
EMT-8374T	2DImf	5/3,5	4000	4000	71	MB5	1200/1000	225	509	MHT1772
EMT-8353T	4DImf	5/3,5	4000	4000	109	1.7D	1700/1150	360	796	MHT1772
EMT-8008LT	7DImf	5/3,5	4000	4000	151	1.7D	1700/1150	360	964	MHT1772
EMT-8375T	12DIfmf	5/3,5	4000	4000	224	2.2D	2200/1150	500	1396	MHT1772
EMT-8367T	19DImf	5/3,5	4000	4000	310	2.35D	2350/1150	600	1840	MHT1772
EMT-8376T	24DImf	5/3,5	2000	4000	410	2.0D	2000/1150	400	1220	MHT1772

MECHANICAL PARAMETERS:

type	microduct bundle outer diameter [mm]	minimum bending radius [mm]	maximum pulling force	
			kG	N
1DImf	9	120	22	220
2DImf	9,0/14,0	120	34	340
4DImf	15,8	200	52	520
7DImf	18,7	240	72	720
12DImf	24,1	320	100	1000
19DImf	28,1	360	150	1500
24DImf	33,7	500	200	2000

DImf Microduct

ORDERING:

EMT-8008LT - 7 x 5/3.5 mm direct-install tube bundle, metal-free, 4000 m drum

TELECOM CATV MAN WAN FTTx PON

OPTOCODE L1110

DIRECT BURY CLOSURES

FEATURES:

- for direct burial
- DB microduct branch capability
- water tight, mechanically durable
- 6-way grommet that allows up to six single DB microducts to be branched from a single port
- wide range of closures allows selection of optimal solution

TDC Closure

TECHNICAL SPECIFICATIONS:

closure type	number of cable entries	dimensions (length/width/height) [mm]	environmental protection	product code
TDC	6	316/220/70	IP67	EMT-TDC
TDM	2 (wide range of configurations)	400/114/114	IP55	EMT-TDM
H	4	470/210/110	IP68	EMT-9190
Ci01	4	405/155/125	IP68	EMT-9500
3A	6	648/160/160	IP68	EMT-7247

TDM Closure

H-Branch Closure

ORDERING:

EMT-TDC - TDC Closure, please specify configuration of microduct entries

TELECOM CATV MAN WAN FTTx PON

CL01 - In-line Branch Closure

OPTOCODE L1120

AERIAL BRANCH CLOSURE EMT-9257

FEATURES:

- dedicated for aerial networks
- aerial distribution point
- designed for use on either lashed or self-supporting aerial cables
- maximum diameter of aerial cable - 26 mm
- housing - a one-piece polypropylene moulding
- all loose parts, except spur cable clamp, are captive
- main cable glands are pre-packed with mastic (additional mastic provided for final packing)
- closed cell foamed PVC seals on re-enterable cover
- drain holes provided to allow the escape of any water that may accumulate within the closure
- ample space provided to allow the use of industry standard waterproof connectors

TECHNICAL SPECIFICATIONS:

- UV resistant
- dimensions (L x W x H): (351 x 135 x 60) mm
- IP42 rated

EMT-9257 Aerial Closure

ORDERING:

EMT-9257 - Aerial Branch Closure

TELECOM ACCESS CATV MAN WAN FTTx PON

LOW FIRE HAZARD INTERNAL CLOSURES

OPTOCODE L1130

Customer Lead In Point

3-Port Branch Closure

4-Port Branch Closure

Y-Branch Closure

FEATURES:

- dedicated for in-building applications
- halogen-free
- all parts are made from flame-retardant materials
- low smoke
- suitable for indoor fire regulation use

TECHNICAL SPECIFICATIONS:

closure type	number of entries	dimensions (length/width/height) [mm]	environmental protection	product code
Customer Lead In Point	1 + building outside wall cable entry	182/43/54	IP55	EMT-7500
3-Port Branch Closure	3	390/240/68	IP54	EMT-7258
4-Port Branch Closure	4	520/280/70	IP54	EMT-7217
Y-Branch Closure	8	300/160/70	IP54	EMT-9018

ORDERING:

EMT-7500 - Customer Lead In Point

ACCESS CATV LAN FTTx PON

OPTOCODE L1140

MICROTUBE CONNECTORS

FEATURES:

- extensive connector range: straight connectors, reducers, end caps
- easy and quick installation
- no dedicated tools requred
- the straight microduct connectors can be pre-fitted with a removable HDPE outer shells to make them direct buried

TECHNICAL SPECIFICATIONS:

connector type	product code	microducts diameter [mm]	description	minimum order quantity
straight connectors	EMT-9916	3	clear	10 pcs.
	EMT-9918	5		
	EMT-9822	5	solid colour	
	EMT-7823	5	5/2.1mm clear	
	EMT-9736	7	7/5.5mm solid colour	
	EMT-9919	7	7/5.5mm clear	
	EMT-70193	7	7/3.5mm clear	
	EMT-9823	10	solid colour	
	EMT-9921	10	clear	
	EMT-9737	12	solid colour	
	EMT-9922	12	clear	
	EMT-9821	14	14/12 mm clear	
	EMT-9734	14	14/10 mm solid colour	
	EMT-9923	14	14/10 mm clear	
reducers	EMT-9925	5/3	5/3.5 - 3/2.1 mm clear	
	EMT-9969	5/3	5/3.5 - 3/2.1 mm solid colour	
	EMT-9926	5/3	5/2.1 - 3/2.1 mm clear	
	EMT-70407	7/3	7 - 3/2.1 mm clear	
	EMT-70031	7/5	7/5.5 - 5/3.5 mm clear	
	EMT-9928	10/8	10-8 mm clear	
	EMT-9971	10/8	10-8 mm solid colour	
	EMT-70034	12/5	12/10 - 5/3.5 mm clear	
	EMT-9735	12/7	12-7 mm solid colour	
	EMT-9929	12/17	12-7 mm clear	
	EMT-9930	12/10	12-10 mm clear	
	EMT-9972	12/10	12-10 mm solid colour	
	EMT-9970	14/10	14-10 mm solid colour	
	EMT-70035	14/10	14-10 mm clear	
	EMT-9931	14/12	14-12 mm clear	
	EMT-9973	14/12	14-12 mm solid colour	
direct buried connectors	EMT-70194	7	7/3.5 mm, with sheath	
	EMT-70169	7	7/5.5 mm, with sheath	
	EMT-70170	10	10/8 mm, with sheath	
	EMT-70171	12	12 mm, with sheath	
	EMT-70172	14	14/10 mm, with sheath	
	EMT-70069	10	straight connector	
	EMT-70070	12		
	EMT-9774	14		
end caps	EMT-70071	10	directly buried	
	EMT-70072	12		
	EMT-9776	14		
	EMT-9932	3	end cap clear	
	EMT-9933	4		
	EMT-9934	5		
	EMT-9935	7		
	EMT-9937	10		
	EMT-9938	12		
	EMT-9939	14		
closedown connectors	EMT-7316	3	covers the fibre and both ends of the break in the microduct	
	EMT-7249	5		
gas block connectors	EMT-9338	5	gas block connector	
	EMT-7507	7		
	EMT-7488	10	gas block connector, medium sized	
	EMT-70165	12		
	EMT-9738B	14		

ORDERING:

EMT-6111 - straight connector for 5 mm outer diamter tube, pack size 10 pcs

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Straight connector

Reducer

End cap

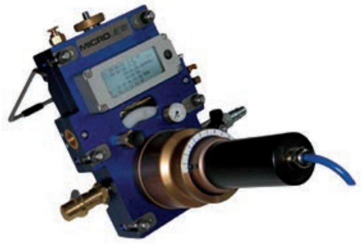
Water block/gas block connector

Direct Bury connector

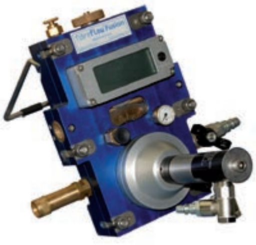
BLOWING EQUIPMENT

OPTOCODE L1150

Blowing Unit EMT-7779



Blowing Unit EMT-9226



Blowing Unit EMT-9220

Blowing Unit EMT-9471

Blowing Unit EMT-7409A

FEATURES:

- the extensive product range allows selection of the optimal solution
- quick and simple installation of fibres and cables
- possibility of cost effective network development without intrusive civil works
- long blowing distances
- possibility of blowing whole drum lengths without cutting the fibre
- some blowing units are pneumatically driven and do not require electrical power supply
- wide range of ancillaries, spare parts and consumables
- the fibre unit installation can be supported by the use of the coiler

TECHNICAL SPECIFICATIONS:

product code	EMT-7779	EMT-9226	EMT-9220	EMT-9471	EMT-7409A
fibre diameter range [mm]	1,1-1,6	0,5-3,0	3,5-8,0	1,0-8,0	1,0-8,0
microduct diameter range [mm]	3,0-8,0	3,0-8,0	7,0-14,0	3,0-14,0	5,0-16,0
fibre units - 2 to 12 fibres	YES	YES		YES	YES
minicables - 24 to 144 fibres			YES	YES	YES
maximum blowing speed [m/min]	55	50	120	50/120	62
drive type	electric	electric	pneumatic	pneumatic	electric
maximum pressure [bar]	16	16	16	16	15
total weight [kg]	10	18,5	15,9	17	40
dimensions (with transportation case) [mm]	435/270/315	600/400/340	590/385/250	591/385/250	470/340/490

ORDERING:

EMT-7409A - Breeze Blowing Unit for minicables

TELECOM ACCESS CATV MAN WAN LAN FTTx PON Industry

OPTOCODE L1160

TOOL KIT EMT-9087

FEATURES:

- includes standard tools and tools dedicated for blown fibre technology
- designed to assure ease of use and installer safety
- the use of correct tools allows the best possible performance and lowers the installation time
- each tool from the tool kit is available separately
- cutters and strippers for various diameter ranges also available

TECHNICAL SPECIFICATIONS:

Item	symbol	description
1.	EMT-9087	Tool box
2.	EMT-9728	Sheath Stripper (4.5-40) mm
3.	EMT-7794	Metal-free cutter for 1DB
4.	EMT-9344	Diagonal Cutters
5.	EMT-7301	Pliers Square nose
6.	EMT-7069	Trimming Knife
7.	EMT-7001	Longitudinal Sheath Stripper
8.	EMT-7071	Rotational Sheath Stripper
9.	EMT-7093	Scissors

Item	symbol	description
10.	EMT-7299	Microduct Rotational Cutter
11.	EMT-9346	42 mm Heavy Duty Cutter
12	EMT-9345	Screwdriver Pack
13.	EMT-7298	Junior Hacksaw
14.	EMT-7041	Flexible Saw
15.	EMT-7300	Sash Tool Brush
16.	EMT-7949	Microduct Rounding Tool
17.	EMT-7236	Collet Locking Tool
18.	EMT-7014	Primary Tube Cutter 12.7mm

Sheath Stripper (4.5-40) mm (EMT-9728)

- capable of making circumferential cuts on cable and microducts
- plastic bodied with a spring loaded “V” anvil to attach it to the cable
- adjustable cutting blade for depth with a capacity of 4.5 to 40 mm

Metal-free cutter for 1DB (EMT-7794)

- designed to remove the outer jacket from a 1 way DB 5 mm tube assembly

Diagonal Cutters (EMT-9344)

- provides clean cutting of metal products, Direct Bury sheaths and fillers

Pliers Square Nose (EMT-7301)

- small combination pliers with cutter

Trimming Knife (EMT-7069)

- ergonomically designed handle allows safer operation
- available without holder

Longitudinal Sheath Stripper (EMT-7001)

- allows easy stripping of outer sheaths without damaging the microtubes inside the microduct

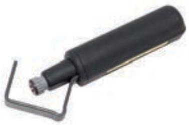
Rotational Sheath Stripper (EMT-7071)

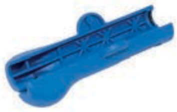
- used for cutting the microduct outer sheath rotationally for gaining access to the primary tubes
- suitable for entering the Direct Buried (DB) microducts with outer diameters from 12 mm to 44 mm

Scissors (EMT-7093)

- heavy-duty scissors
- they can cut through foil, sheath, rope, etc.

Tool Kit

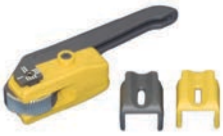

EMT-9728

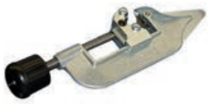

EMT-7794

EMT-9344

EMT-7301

EMT-7069


EMT-7001


EMT-7071

EMT-7093

EMT-9087 TOOL KIT

OPTOCODE L1160

EMT-7299

EMT-9346

EMT-9345

EMT-7298

EMT-7041

EMT-7300

EMT-7949

EMT-7236

EMT-7014

Microduct Rotational Cutter (EMT-7299)

- suitable for stripping cable jackets and microduct outer sheaths
- allows both longitudinal and circumferential cuts

42 mm Heavy Duty Cutter (EMT-9346)

- Heavy Duty Cutter suitable for cutting through the microducts with up to 42 mm outer diameter
- allows easy cutting of different kinds of microducts especially Direct Buried
- Cutting range is from 10 - 42 mm outer diameter

Screwdriver Pack (EMT-9345)

- 6 piece set of general purpose screwdrivers
- includes: two pozi and four slotted screwdrivers

Junior Hacksaw (EMT-7298)

- extremely useful for cutting HDPE sub ducts and tube bundles

Flexible Saw (EMT-7041)

- flexible saw for cutting tree roots

Sash Tool Brush (EMT-7300)

- suitable for removing dust and dirt from the inside of blowing head or the mating surfaces of a closure

Microduct rounding tool (x4) (EMT-7949)

- used to round microducts with 3 mm, 5 mm and 10 mm outer diameter after cutting and before adding a connector

Collet Locking Tool (EMT-7236)

- this tool ensures that the microduct is correctly locked into the connector

Primary Tube Cutter 12.7 mm (EMT-7014)

- gives a clean, straight cut to the microduct before inserting into a connector

ORDERING:

EMT-7833B - Tool Box Kit

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ADDITIONAL TOOLS

OPTOCODE L1170

EMT-7000

EMT-7066

Cable jacket, microduct sheath stripper (EMT-7000)

- allows circumferential cuts of a cable jacket or microduct sheath
- platic handle with V-shaped cable holder
- adjustable cutting depths of 4.0 mm to 16 mm
- not suitable for Direct Buried microduct outer sheaths

Cable jacket, microduct sheath stripper (EMT-7066)

- allows circumferential cuts of a cable jacket or microduct sheath
- plastic handle with V-shaped cable holder
- adjustable cutting depths of 8.0 mm to 28 mm.

OPTOCODE L1170

ADDITIONAL TOOLS

Stripper (EMT-7777)

- used for cutting ducts or cables around outer sheath with diameters between 29 and 35 mm
- equipped with plastic hand and V holder for grabbing a cable
- tunnable cutting depth from 29 to 35 mm
- does NOT suit direct burrow microducts

Stripper (EMT-7065)

- used for cutting ducts or cables around outer sheath
- for sheaths of diameter between 35 and 50 mm
- equipped with plastic hand and V holder for grabbing a cable
- tunnable cutting depth from 35 to 50 mm
- does NOT suit direct burrow microducts

Duct Clipper (EMT-72799A)

- used for cutting round sheathed product rotationally, for gaining access to the primary tubes underneath the sheathed product

Duct Cutter (EMT-72799012)

- for duct cutting
- dimensions: 3 -14 mm

Duct Cutter (EMT-7068)

- for easy cutting of all microduct products, especially the DB type
- cutting range from 10 - 42 mm outer diameter
- high durability and damage resistance

Stripper (EMT-9342)

- a tool to remove the outer jacket and aid the brakeout of individual fibres from the Emtelle 2 or 4 fibre unit

Stripper (EMT-7335)

- a precision tool used to remove the primary coating from fibres

Stripper (EMT-7562)

- used in the removal of outer sheaths of fibre units
- used in the crimping of blowing beads
- codes 7318a & 7512a

Stripper (EMT-7064)

- enables longitudinal cutting of microducts
- used on products where a rip cord is not available
- will cut along 3mm thick sheaths and through glass reinforcement

Cable Pull Sock (EMT-708A)

- used to install any size of sheathed products
- installed by pulling an expandable woven steel sleeve that grips lightly onto cables as pulling tension is applied

Blowing Beads (EMT-7318A)

- fixed to the end of the fibre before blowing starts
- guides the fibre through connectors and around sharp bends

ORDERING:

EMT-7068 - high durability microduct cutter for diameters under 42 mm

TELECOM ACCESS CATV MAN WAN LAN FTTx PON Industry

EMT-7777

EMT-7065

EMT-72799A

EMT-72799012

EMT-7068

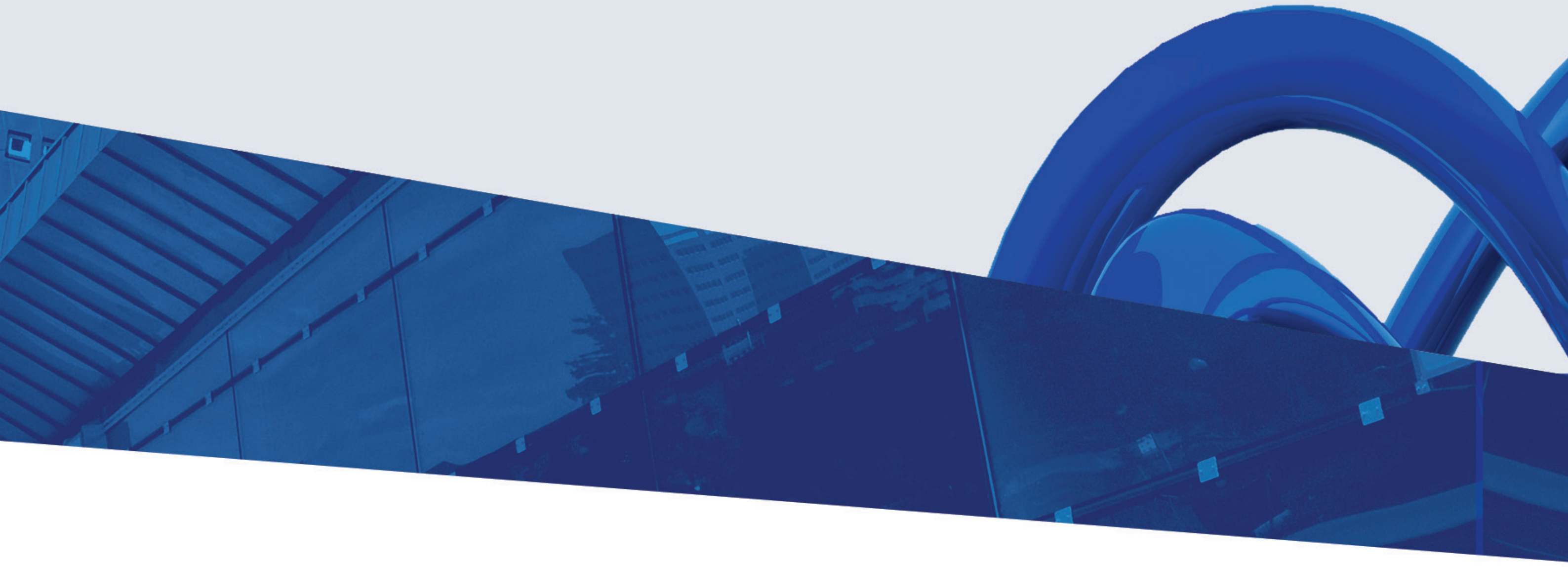
EMT-9342

EMT-7335

EMT-7562

EMT-7064

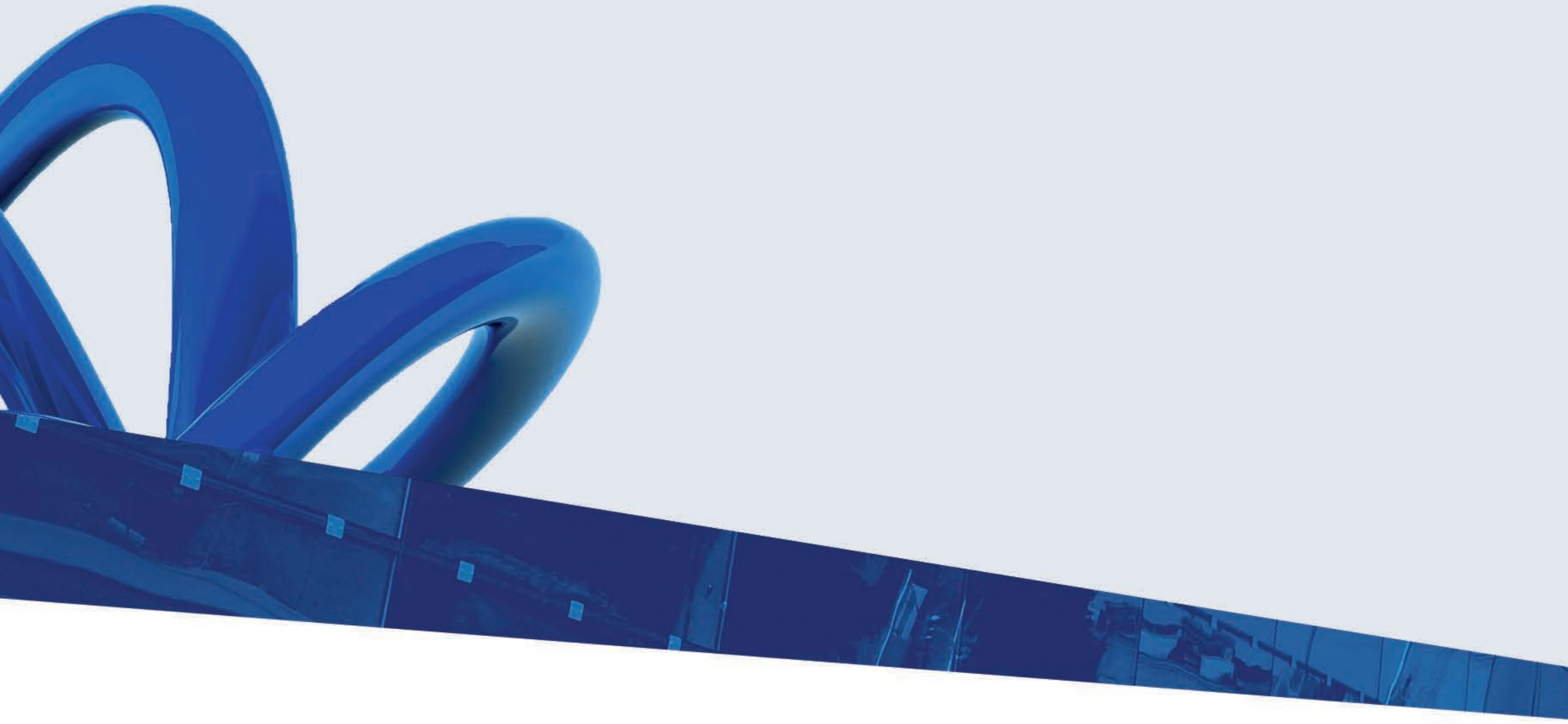
7



The aerial networks are built mainly in rarely populated suburban areas as well as in rocky, muddy or sandy regions that are difficult for underground installations. The suspended systems are friendly for further network expansions and can be quickly repaired in case of line breaks.

The fiber optic overhead network system consists of a wide range of self-supporting distribution and subscriber cables, cable suspensions, brackets and auxiliary accessories for cable installation on wooden, steel or concrete poles as well as on power line pylons. The cables offered by OPTOMER are mechanically and environmentally durable with excellent UV resistance. The installation equipment allow building the reliable overhead networks in all possible configurations and various operating conditions.

AERIAL NETWORKS



NSR-12 AERIAL DISTRIBUTION BOX 144
CCU5032 AERIAL CABLE 145
CCU5031 AERIAL CABLE 146
CCU5030 AERIAL CABLE 147
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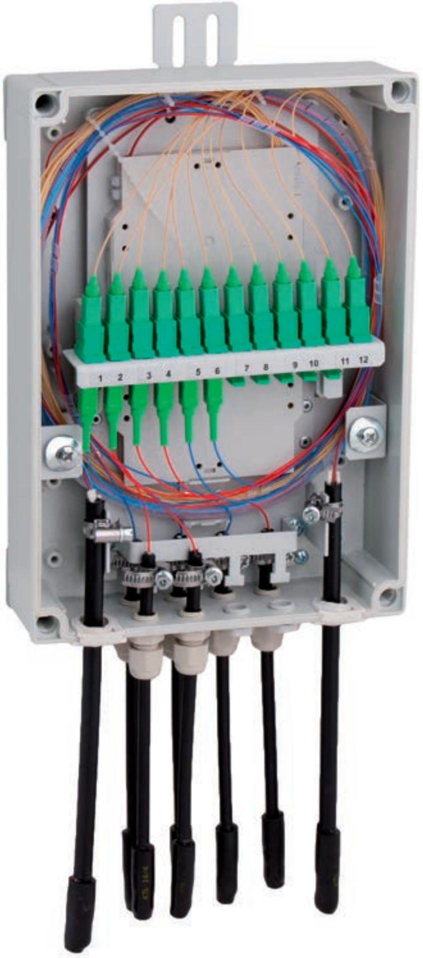
UPB UNIVERSAL POLE BRACKET 160
CT8 UNIVERSAL CONSOLE 160
CS CONSOLE + BQC12X50 HOOK BOLT 161
CS1500 POLE BRACKET 161
EC13, EC13T GROUNDING CLAMP 162
EW49, EWI46 GROUNDING WIRE 162
ER1610R, ER2012 GROUNDING ROD 163
ERC16, ERC20 COPPER CLAMP 163

NSR-12 AERIAL DISTRIBUTION BOX

OPTOCODE M1310



NSR-12 Aerial Distribution Box

FEATURES:

- specially designed for FTTH
- used in aerial optical networks
- termination of 12 fibres
- 12 patching fields
- 8 drop entries
- UV proof plastic closure
- IP66 environmental protection
- possible introduction of uncut cable

EQUIPPED WITH:

- KSQ splice tray
- PG gland, cable ties
- dedicated bracket
- lock (optional)
- installation and handling instructions
- installation kit

TECHNICAL SPECIFICATIONS:

	NSR-12
dimensions width/hight/depth [mm]	180/255/65
0.9 mm buffered fibre pigtail length	1 m
number of cable entries (6 to 8.5) mm	2
number of 6 mm cable entries	8
maximum splice/adapter capacity	12
maximum cable diameter [mm]	ø8,5

ORDERING:

NP-NSR12- Aerial Distribution Box

Notice: the accessories for aerial networks i.e. splice closures, spare length cable boxes etc. are described in chapter 4

TELECOM ACCESS FTTx PON

OPTOCODE M1010

CCU5032 AERIAL CABLE

FEATURES:

- aerial cable for power network poles instalation
- 96 to 144 fibres
- pole span up to 200 m under different weather conditions
- water and gunshot resistant
- safe to use on power network poles

TECHNICAL SPECIFICATIONS:

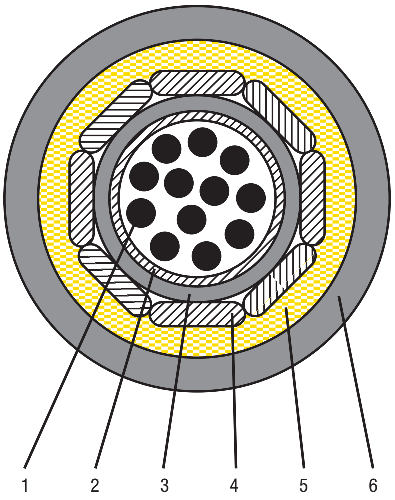
		69 to 144 fibres	
		CCU	CCU extended
temperature range [°C]:	transportation and storage	-40 to +70	
	installation	-5 to +50	
	operation	-40 to +70	
maximum pulling force [N]		> 20 000	
crash resistance [N/cm]		450	
minimum bending radius [mm]		170	
tightness		resistant against longitudinal water penetration	
standard packaging		2 km or 5 km drums	
nominal sheath thickness [mm]		1,2	
nominal diameter [mm]		14,8	16,2
nominal weight [kg/km]		192	222
outer sheath marking		year and week of manufacturing-ACOME-number and type of fibres-product code + metric	

ORDERING:

NP-CCU5032/8/12 - aerial cable for power network pole installation, with 8 tubes 12 fibres each

TELECOM ACCESS FTTx PON

CCU5032 aerial cable cross section

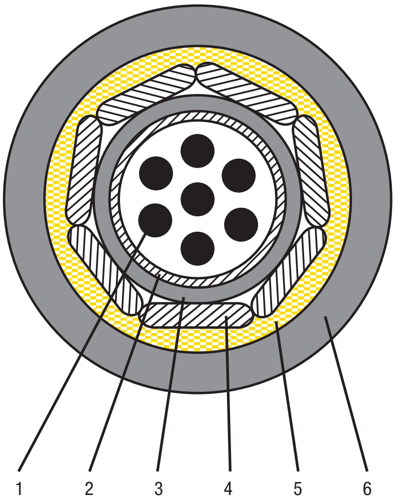


1. *6, 8 or 12 fibres tube*
2. *water barrier*
3. *thermoplastic central tube*
4. *strength members (fibre reinforced plastic)*
5. *aramid yarns*
6. *HDPE outer sheath*

CCU5031 AERIAL CABLE

OPTOCODE M1020

CCU5031 cable cross section



1. *6, 8 or 12 fibres tube*
2. *water barrier*
3. *thermoplastic central tube*
4. *strength members (fibre reinforced plastic)*
5. *aramid yarns*
6. *HDPE outer sheath*

FEATURES:

- aerial cable for power network poles instalation
- 60 to 84 fibres
- pole span up to 200 m under different weather conditions
- water and gunshot resistant
- safe to use on power network poles

TECHNICAL SPECIFICATIONS:

		60 to 84 fibres	
		CCU	CCU extended
temperature range [°C]:	transportation and storage	-40 to +70	
	installation	-5 to +50	
	operation	-40 to +70	
maximum pulling force [N]		> 20 000	
crush resistance [N/cm]		450	
minimum bending radius [mm]		150	
tightness		resistant against longitudinal water penetration	
standard packaging		2 km or 5 km drums	
nominal sheath thickness [mm]		1,2	
nominal diameter [mm]		14,0	15,5
nominal weight [kg/km]		163	194
outer sheath marking		year and week of manufacturing-ACOME-number and type of fibres-product code + metric	

ORDERING:

NP-CCU5031/5/12 - aerial cable for power network pole installation, with 5 tubes 12 fibres each

TELECOM ACCESS FTTx PON

OPTOCODE M1030

CCU5030 AERIAL CABLE

FEATURES:

- aerial cable for power network poles instalation
- 12 to 48 fibres
- pole span up to 200 m under different weather conditions
- water and gunshot resistant
- safe to use on power network poles

TECHNICAL SPECIFICATIONS:

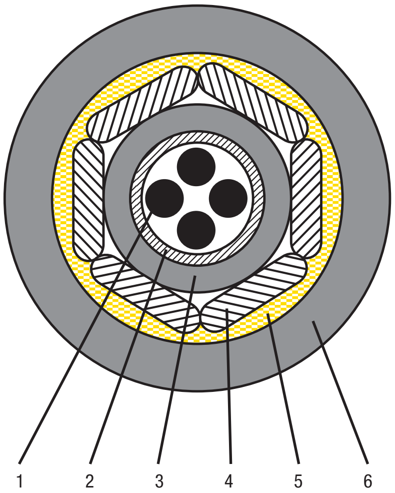
		12 to 48 fibres	
		CCU	CCU extended
temperature range [°C]:	transportation and storage	-40 to +70	
	installation	-5 to +50	
	operation	-40 to +70	
maximum pulling force [N]		> 20 000	
crush resistance [N/cm]		450	
minimum bending radius [mm]		170	
tightness		resistant against longitudinal water penetration	
standard packaging		2 km or 5 km drums	
nominal sheath diameter [mm]		1,2	
nominal diameter [mm]		13,3	14,8
nominal weight [kg/km]		151	181
outer sheath designation		year and week of manufacturing-ACOME-number and type of fibres-product code + metric	

ORDERING:

NP-CCU5030/4/8 - aerial cable, for power network pole installation, with 4 tubes, 8 fibres each

TELECOM ACCESS FTTx PON

CCU5030 cable cross section



1. *6, 8 or 12 fibres tube*
2. *water barrier*
3. *thermoplastic central tube*
4. *strength members (fibre reinforced plastic)*
5. *aramid yarns*
6. *HDPE outer sheath*

LTA1597 AERIAL CABLE

OPTOCODE M1040

FEATURES:

- figure of eight aerial cable
- galvanically protected steel suspension strength member
- pole span up to 100 m
- protected against weather conditions

TECHNICAL SPECIFICATIONS:

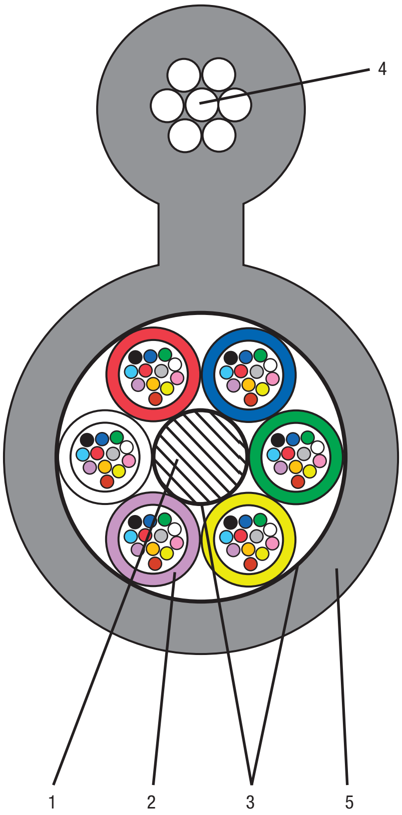
		72 fibres (6 loose tubes)	96 fibres (8 loose tubes)
temperature range [°C]:	transportation and storage	-40 to +70	
	installation	-5 to +50	
	operation	-40 to +70	
maximum pulling force [N]		8600	8600
crush resistance [N/cm]		300	
minimum bending radius [mm]		150	180
standard packaging		2 km and 5 km drums	
nominal sheath diameter [mm]		1,5	
nominal diameter [mm]		10,6 x 18,6	12,3 x 20,3
nominal weight [kg/km]		158	167
outer sheath designation		year and week of manufacturing-ACOME-number and type of fibres-product code + metric	

ORDERING:

NP-LTA1597/6/8 - figure of 8 aerial cable, with 6 tubes, 8 fibres each

TELECOM ACCESS FTTx PON

LTA1597 cable cross section



1. *fiber reinforced plastic core*
2. *loose tubes with 6, 8 or 12 fibres each, filled with hydrofobic gel*
3. *water blocking yarns*
4. *galvanically protected steel suspension strength member*
5. *high density poliethylen sheath*

OPTOCODE M1050

LTA1596 UNIVERSAL CABLE

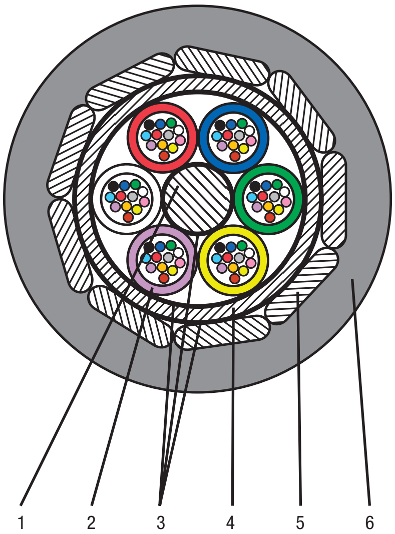
FEATURES:

- for direct burial, cable ducts or aerial installation
- high mechanical strength
- pole span up to 100 m
- rodent and gunshot proof

TECHNICAL SPECIFICATIONS:

		up to 72 fibres (6 loose tubes)	up to 96 fibres (8 loose tubes)	up to 144 fibres (12 loose tubes)	up to 216 fibres (18 loose tubes)
temperature range [°C]:	transportation and storage	-40 to +70			
	installation	-5 to +50			
	operation	-40 to +70			
maximum pulling force [N]		10	13,4	17,3	17,3
crush resistance [N/cm]		450			
minimum bending radius [mm]		230	230	300	300
standard packaging		2 km, 4 km, 6km or 8 km drums			
nominal sheath diameter [mm]		2			
nominal diameter [mm]		15	16,3	20,2	20,2
nominal weight [kg/km]		220	255	355	370
outer sheath designation		year and week of manufacturing-ACOME-number and type of fibres-product code + metric			

LTA1596 universal cable cross section



1. *fibre reinforced plastic core*
2. *polyester loose tubes with 6, 8 or 12 fibres each, filled with hydrofobic gel*
3. *water blocking yarns*
4. *polyethylene inner sheath*
5. *flat FRP braid protecting against rodents*
6. *HDPE outer sheath*

ORDERING:

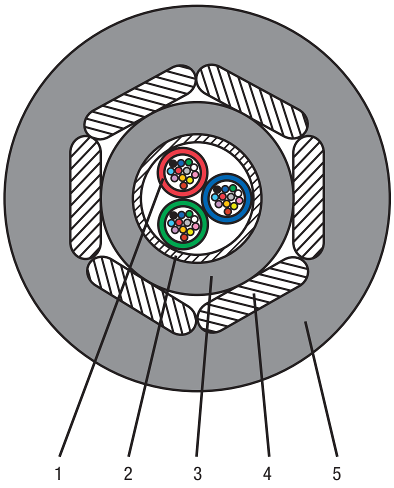
NP-LTA1596/18/12 - universal cable with 18 tubes 12 fibres each

TELECOM ACCESS FTTx PON

CCU1577 UNIVERSAL CABLE

OPTOCODE M1060

CCU1577 universal cable cross section



1. *compact tube with 6, 8 or 12 fibres*
2. *water barrier*
3. *thermoplastic central tube*
4. *rodent proof FRP strength elements*
5. *HDPE outer sheath*

FEATURES:

- for direct burial, duct and aerial installations
- 12 to 144 fibres
- high mechanical strength
- gunshot and rodent proof
- up to 200 m span, depending on weather conditions
- provides fluent transition from aerial to underground installation

TECHNICAL SPECIFICATIONS:

		36 fibres (6 compact tubes)	72 fibres (12 compact tubes)	144 fibres (12 compact tubes)
temperature range [°C]:	transportation and storage	-40 to +70		
	installation	-5 to +50		
	operation	-40 to +70		
maximum pulling force [N]		4000	4000	6000
crush resistance [N/cm]		450	450	500
minimum bending radius [mm]		150	150	170
standard packaging		2 km, 3 km or 4.8 km drums		
nominal sheath diameter [mm]		1,5	1,5	1,5
nominal diameter [mm]		12	13,3	14,5
nominal weight [kg/km]		125	165	190
outer sheath designation		year and week of manufacturing-ACOME-number and type of fibres-product code + metric		

ORDERING:

NP-CCU1577/8/12 - universal cable for direct burial, duct and aerial installations, with 8 tubes, 12 fibres each

TELECOM ACCESS FTTx PON

OPTOCODE M1070

UNC1636 AERIAL CABLE

FEATURES:

- for duct or aerial installations
- used in FTTH networks
- up to 144 fibres
- ability to pull or blow into microducts on distances up to 100 m
- minimalized friction inside ducts

TECHNICAL SPECIFICATIONS:

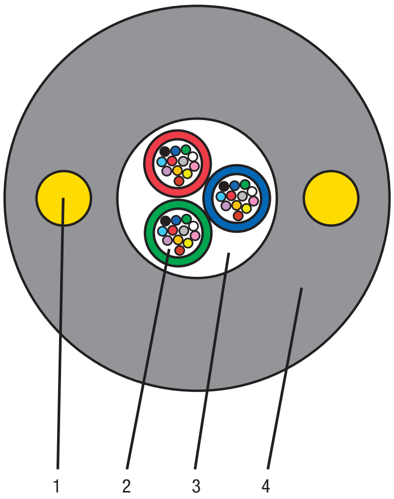
		1 to 12 fibres (1 compact tube)	24 to 36 fibres (3 compact tubes)	48 fibres (4 comapct tubes)	72 fibres (6 compact tubes)	144 fibres (12 compact tubes)
temperature range [°C]:	transportation and storage	-40 to +70				
	installation	-5 to +50				
	operation	-40 to +70				
maximum pulling force [N]		800	1200	2000	2200	2700
crush resistance [N/cm]		200		250	300	
minimum bending radius [mm]		60	80	120	150	200
standard packaging		2 km, 4 km, 6 km and 8 km drums				
nominal sheath diameter [mm]		2				
nominal diameter [mm]		6	8,5	9,5	10,7	11,3
nominal weight [kg/km]		31,5	49	62	84	146
outer sheath designation		year and week of manufacturing-ACOME-number and type of fibres-product code + metric				

ORDERING:

NP-UNC1634/1/12 - outdoor cable for aerial or subduct installation, with 1 tube containing 12 fibres

TELECOM ACCESS FTTx PON

UNC1634 aerial cable cross section

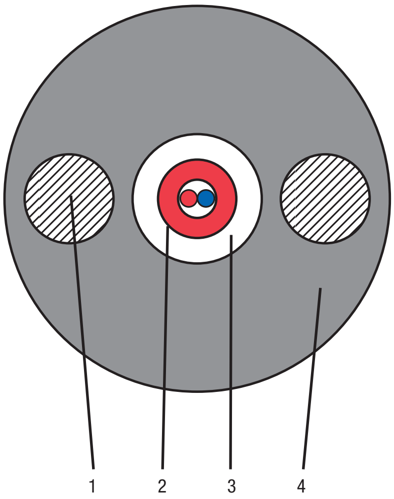


1. *FRP strength members*
2. *compact tube (capacity up to 12 fibres)*
3. *water swellable tape*
4. *HDPE outer sheath*

UNC1630 OUTDOOR DROP CABLE

OPTOCODE M1080

UNC 1630 drop cable cross section



1. *FRP strength members*
2. *1 or 2 fibres in easy strip tube*
3. *water blocking yarn*
4. *HDPE outer sheath*

FEATURES:

- for duct and aerial installations
- 1 or 2 fibres
- enables direct connection between the distribution point (e.g. on a pole) to the customer optical outlet
- low friction coefficient ensures easy sliding inside the duct

TECHNICAL SPECIFICATIONS:

		1 or 2 fibres
temperature range [°C]:	transportation and storage	-40 to +70
	installation	-5 to +50
	operation	-40 to +70
maximum pulling force [N]		800
crush resistance [N/cm]		200
minimum bending radius [mm]		60
standard packaging		2100 m or 4200 m drums
nominal diameter [mm]		6
nominal weight [kg/km]		31
outer sheath designation		year and week of manufacturing-ACOME-number and type of fibres-product code + metric

ORDERING:

NP-UNC1630/2 - outdoor drop cable, for duct and aerial installation, with 2 fibres

TELECOM ACCESS FTTx PON

OPTOCODE M1090

UNC1629 OUTDOOR DROP CABLE

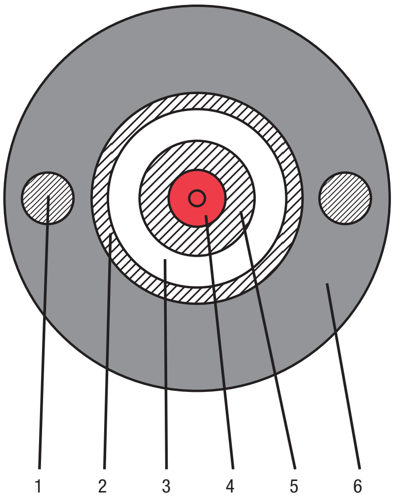
FEATURES:

- for duct and aerial installations
- 1 or 2 fibres in 900 µm buffer
- enables direct connection between the distribution point (e.g. on a pole) to the customer optical outlet
- low friction coefficient ensures easy sliding inside the duct
- when outer sheath is removed, cable becomes an indoor LSOH cable

TECHNICAL SPECIFICATIONS:

		single fibre cable	two fibre cable
temperature range [°C]:	transportation and storage	-40 to +70	
	installation	-5 to +50	
	operation	-40 to +70	
maximum pulling force [N]		800	
crush resistance [N/cm]		200	
minimum bending radius [mm]		60	75
standard packaging		2100 m or 4200 m drums	
nominal diameter [mm]		6,1	7,7
minimum sheath thickness [mm]		0,8	0,8
nominal inner sheath diameter [mm]		2,7	4,1
indoor cable mounting		sticking	sticking or stapling
nominal weight [kg/km]		30	40
outer sheath designation		year and week of manufacturing-ACOME-number and type of fibres-product code + metric	

UNC1629 drop cable cross section



1. *FRP strength members*
2. *aramid yarns with water barrier*
3. *indoor LSOH sheath*
4. *1 or 2 singlemode fibres in 900 um buffer,*
5. *aramid yarns and water barrier*
6. *HDPE outer sheath*

ORDERING:

NP-UNC1629/1 - outdoor drop cable for aerial and duct installation, with single fibre

TELECOM ACCESS FTTx PON

AC6, AC7, AC10 ANCHORING CLAMP

OPTOCODE M1100

FEATURES:

- dedicated for figure 8 cables with steel messenger
- consists of body, jaws and stainless steel bail
- body made of plastic in case of AC6 and alluminium alloy in case of AC7 and AC10
- zink alloy jaws
- quick, easy and direct ending of figure 8 cable with steel messenger, with no need to strip the cable

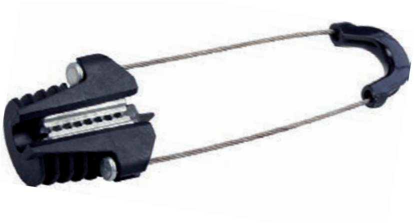
TECHNICAL SPECIFICATIONS:

figure 8 cable with steel messenger			anchoring clamp			
messenger diameter (including sheath)	load on installation		clamp type	loop length	weight [kg]	packaging [pcs.]
	min.	max.				
3 mm to 6 mm	40 daN	100 daN	AC6 260	260 mm	0,09	100
4 mm to 7 mm	60 daN	250 daN	AC7 500	500 mm	0,17	80
7 mm to 10 mm	200 daN	500 daN	AC10 500	500 mm	0,30	50

ORDERING:

NP-UO-AC6260 - anchoring clamp for figure 8 cable with steel messenger

TELECOM ACCESS FTTx PON



AC6 260 anchoring clamp

AC7 500 anchoring clamp

AC10 500 anchoring clamp

OPTOCODE M1120

SC39B SUSPENSION CLAMP

FEATURES:

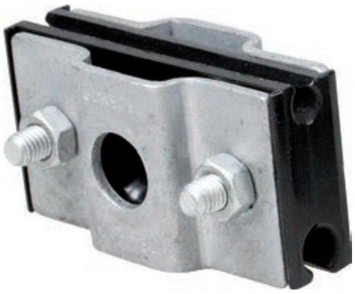
- galvanised steel clamp
- mounts figure of 8 cables with messenger diameter ranging from 4mm to 9 mm
- mounted on wooden poles with single bolt or with steel bands on any other poles (pole brcket required)
- the interior part of the jaws made of UV proof, thermoplastic material
- minimised damage caused by the extensive vertical cable load
- clamp mass: 0.25 kg
- packed 100 pieces per box

ADDITIONAL EQUIPMENT:

- JHC bracket
- 30/41 bracket
- bolt

ORDERING:

NP-UP-SC39B - suspension clamp for figure of 8 cables



SC39B figure of 8 cable clamp

OPTOCODE M1130

SC39C SUSPENSION CLAMP

FEATURES:

- galvanised steel clamp
- mounts figure of 8 cables with messenger diameter ranging from 4 mm to 9 mm
- mounted on wooden poles with single bolt or with steel bands on any other poles (pole brcket required)
- the interior part of the jaws made of UV proof, thermoplastic material
- minimised demage caused by the extensive vertical cable load
- jaws with small groove are suitable for messenger diameters ranging from 4 mm to 6 mm, with wide groove for 6 mm to 9 mm messenger diameter
- clamp mass: 0.22 kg
- packed 100 pieces per box

ADDITIONAL EQUIPMENT:

- JHC bracket
- 30/41 bracket
- bolt

ORDERING:

NP-UP-SC39C - figure of 8 cable clamp

SC39C figure of 8 cable clamp

TELECOM ACCESS FTTx PON

Z30/34 SUSPENSION CLAMP

OPTOCODE M1140

Z30/34 figure 8 cables' suspension clamp

FEATURES:

- galvanised steel clamp
- mounts figure of 8 cables with messenger diameter ranging from 4 mm to 9 mm
- mounted on wooden poles with single bolt or with steel bands on any other poles (pole brcket required)
- the interior part of the jaws made of UV proof, thermoplastic material
- minimised demaged caused by the extensive vertical cable load
- jaws with small groove are suitable for messenger diameters ranging from 4 mm to 5 mm, with wide groove for 6 mm to 9 mm messenger diameter
- 2 brackets with wholes for suspending e.g. pulleys during cable installation
- clamp mass: 0.24 kg
- packed 100 pieces per box

ADDITIONAL EQUIPMENT:

- bolt

ORDERING:

NP-UP-Z30/34 - figure of 8 cable suspension clamp

SS1025 SUSPENSION BELT

OPTOCODE M1160

SS1025 Suspension belt

FEATURES:

- dedicated for ADSS cables of diameter up to 30 mm, or figure of 8 cables of the total hight of 36 mm including messenger
- resistant to weather conditions
- long lifespan
- maximum vertical tension 120 daN
- belt mass 0.1 kg
- packed 300 pieces per box

ORDERING:

NP-UP-SS1025 - ADSS cables suspension belt for up to 30 mm cable diameter

SRO PULLEY

OPTOCODE M1230

SRO Pulley

FEATURES:

- for ADSS cables of diameter up to 25 mm
- pole span 100 m
- the pulley is made of UV stabilised plastic
- mounted with bolt of hardened steel
- in order to protect cable against wear caused by friction, it should be protected with PCV spiral in place of contact with the pulley

ORDERING:

NP-UP-SRO/GS16.2.16 - Pulley with spiral protection for 17 mm to 22 mm cable diameters

TELECOM ACCESS FTTx PON

OPTOCODE M1110

ACADSS ANCHORING CLAMP

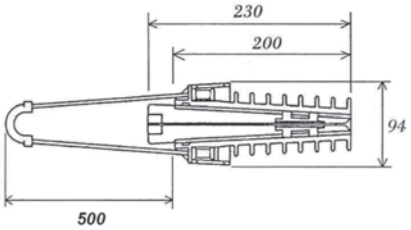
FEATURES:

- anchoring clamp with elastic, stainless steel bail
- body and wedges made of UV proof, thermoplastic material
- pole span up to 100 m
- a selection of clamps covering the whole range of ADSS cable diameters
- mass of a single clamp 0.4 kg
- packed 30 pieces in box

ACADSS10 anchoring clamp

TECHNICAL SPECIFICATIONS:

anchoring clamp	ADSS cable diameter (including outer sheath)
ACADSS10	8 to 12 mm
ACADSS12	10 to 14 mm
ACADSS14	12 to 16 mm
ACADSS16	14 to 18 mm
ACADSS18	16 to 20 mm



ACADSS10 clamp cross section

ORDERING:

NP-UP-ACADSS10 - ADSS cable anchoring clamp for diameters ranging from 8 mm to 12 mm, for installation on poles with 100 m span

OPTOCODE M1150

JHC1015, JHC1520 J-HOOK CLAMP

FEATURES:

- suspension clamp for 10 mm to 20 mm diameter ADSS cables
- installation on intermediate poles
- pole span up to 100 m
- installation on straight cable routes or with angles of max. 25°, in case of more severe angles protect the cable by installing 2 anchoring clamps
- made of galvanised steel with neoprene inset
- UV stabilised
- JHC1015 used for diameterrange from 10 mm to 15 mm, clamp mass 0.59 kg
- JHC1520 used for diameterrange from 15 mm to 20 mm, clamp mass 0.57 kg

JHC1015 suspension clamp

ORDERING:

NP-UP-JHC1015 - J-Hook suspension clamp wit neoprene inset, for cable diameter range of 10 mm to 15 mm

TELECOM ACCESS FTTx PON

GSHS AR HELICAL SUSPENSION

OPTOCODE M1170

GSHS AR Helical Suspension

FEATURES:

- helical suspension for ADSS cables
- pole span from 100 m to 250 m
- each suspension set consists of:
  - 4 helical armour rods
  - 1 suspension eyelet

EQUIPPED WITH:

- brackets
- installation tools for bolt mounting
- installation tools for band mounting

TECHNICAL SPECIFICATIONS:

designation	capacity	cable diameter range [mm]	wire diameter Ø [mm]	number of wires in a braid	length L1 [mm]	wire diameter Ø [mm]	number of wires in the armour braid	length L2 [mm]	weight [kg]
GSHS AR 1050 white marker	10,5-11,3	10,7-11,0	3,25	3	880	2,18	(3x3)+5=14	1200	0,72
GSHS AR 1150 yellow marker	11,5-12,6	11,8-12,2	3,25	3	880	2,18	(3x4)+3=15	1200	0,78
GSHS AR 1250 black marker	12,5-13,6	12,8-13,2	3,25	3	880	2,18	4x4=16	1200	0,84
GSHS AR 1290 green marker	12,9-14,6	13,2-13,7	3,25	3	880	2,18	4x4=16	1200	0,86
GSHS AR 1350 blue marker	13,5-14,5	13,8-14,1	3,25	3	880	2,18	4x4=16	1200	0,86
GSHS AR 1420 red marker	14,2-15,2	14,5-14,8	3,25	3	880	2,18	(3x4)+5=17	1200	0,92
GSHS AR 1530 brown marker	15,3-16,8	15,5-16,4	3,25	3	880	2,18	(2x4+2x5)=18	1200	0,98

pack size: 5 sets (1 set = 1 suspension eyelet + 4 armour rods)

Notice: The complementary equipment is chosen depending on the pole types and their configuration.

ORDERING:

NP-OP-GSHS AR 1150 - helical suspension for cable diameter range of 11.8 mm to 12.2 mm

TELECOM ACCESS FTTx PON

OPTOCODE M1180

GSDE AR HELICAL DEAD END

FEATURES:

- helical dead end for ADSS cables
- made of galvanised steel
- pole span from 100 m to 250 m
- each set consists of:
  - 4 armour rods
  - 1 helical dead end loop

EQUIPPED WITH:

- thimbles
- turnbuckles
- shackles
- brackets
- installation tools for bolt mounting
- installation tools for band mounting

GSDE AR Helical Dead End

TECHNICAL SPECIFICATIONS:

designation	cable diameter range Ø [mm]	loop				armour rods				weight [kg]
		wire diameter Ø [mm]	number of wires in a braid	length [mm]		ø wire [mm]	number of wires in armour braid	length [mm]		
				L	L1			L	M	
GSDE AR 1050 white marker	10,5-11,3	3,25	5	820	533	2,18	(3x3)+5=14	1050	330	1,530
GSDE AR 1150 yellow marker	11,5-12,6	3,25	5	820	533	2,18	(3x4)+3=15	1050	330	1,570
GSDE AR 1250 black marker	12,5-13,6	3,25	5	820	533	2,18	4x4=16	1050	330	1,610
GSDE AR 1290 green marker	12,9-14,6	3,25	5	820	533	2,18	4x4=16	1050	330	1,625
GSDE AR 1350 blue marker	13,5-14,5	3,25	5	820	533	2,18	(3x4)+5=17	1050	330	1,655
GSDE AR 1420 red marker	14,2-15,2	3,25	5	820	533	2,18	(3x5)+3=18	1050	330	1,665
GSDE AR 1530 brown marker	15,3-16,6	3,25	5	820	533	2,18	(3x5)+3=18	1050	330	1,685

pack size: 2 sets (1 set = 1 helical dead end loop + 4 armour rods)

Notice: The complementary equipment is chosen depending on the pole types and their configuration.

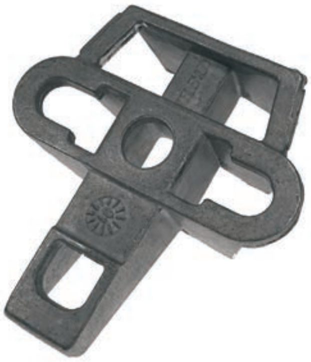
ORDERING:

NP-OP-GSDE AR 1420 - Helical Dead End for cable diameter range of 14.2 mm to 15.2 mm

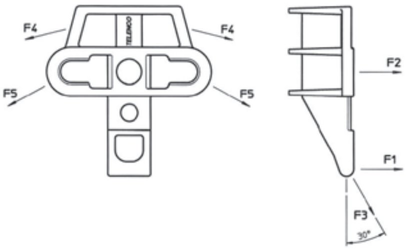
TELECOM ACCESS FTTx PON

UPB UNIVERSAL POLE BRACKET

OPTOCODE M1190



UPB Bracket



UPB bracket design and loading scheme

FEATURES:

- made of high strength alluminium alloy
- dedicated for wooden, metal and concrete poles

USE:

- suspension of ending pulleys
- cable fixing in connection points
- mounting drop cables in branching points
- mounting horizontal brackets
- ending of one, two, or three parallel lines
- installation of dead ends

TECHNICAL SPECIFICATIONS:

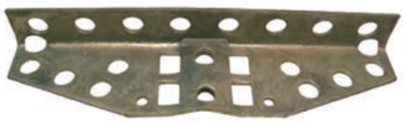
installation	• • with two 20 mm or 3/4 inch steel bands • • with one 14 or 16 mm diameter bolt	
maximum working load (safety factor = 3)	• Dead-ending F1 *	500 daN
	• Dead-ending F2*	300 daN
	• Guying / stay F3*	930 daN
	• Service lines F4*	200 daN
	• Angles F5*	500 daN
material	Aluminium alloy	
weight [kg]	0,2	
packaging	30 pieces per box	

ORDERING:

NP-WS-UPB - Universal Pole Bracket

CT8 UNIVERSAL CONSOLE

OPTOCODE M1200



CT8 Universal Console

FEATURES:

- made of galvanised steel
- ability to suspend up to 8 lines and variety of equipment
- dedicated for wooden, metal or concrete poles, independently of their shape

ORDERING:

NP-WSCT8 - Universal Pole Console

TELECOM ACCESS FTTx PON

OPTOCODE M1210

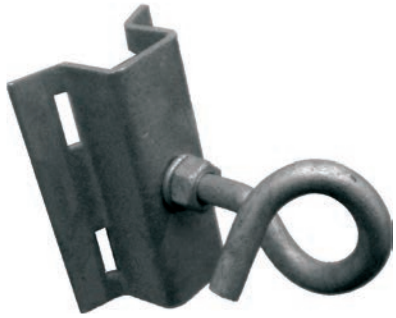
CS CONSOLE + BQC12X50 HOOK BOLT

FEATURES:

- made of galvanised steel
- mounted on intermediate poles with one 12 x 50 bolt equipped with 1 square nut, 1 round washer, 1 spring washer and 1 hexagonal nut
- mounted with 20 mm steel bands on each pole type
- bracket mass: 0.22 kg
- bolt mass: 0.10 kg
- packed 50 pieces per box

ORDERING:

CS/BQC1250 - CS Bracket with 12 mm x 50 mm hook bolt



CS Bracket with BQC12x50 Hook Bolt

OPTOCODE M1220

CS1500 POLE BRACKET

FEATURES:

- aluminum bracket
- dimensions (170 x 80) mm, 38 mm eyelet diameter
- dedicated for wooden, metal and conrete poles of different shapes

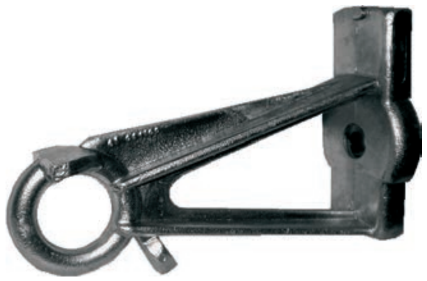
TECHNICAL SPECIFICATIONS:

mounting	• with two 20 mm or 3/4 inch steel bands • with one 14 or 16 mm diameter bolt
breaking load	F (at 33° angle) = 1000 daN
material	aluminum alloy
weight [kg]	0,2
packaging	50 pieces

ORDERING:

NP-WS-CS1500 - Pole Bracket

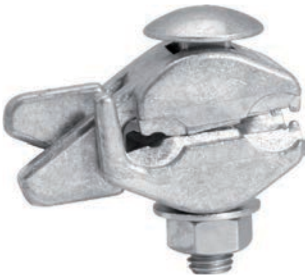
TELECOM ACCESS FTTx PON



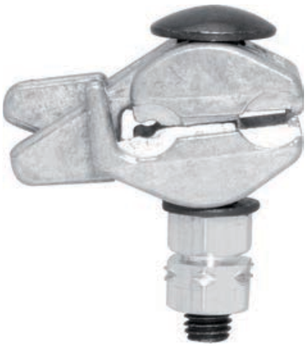
CS1500 Pole Bracket

EC13, EC13T GROUNDING CLAMP

OPTOCODE M1240



EC13 Grounding Clamp



EC13T Grounding Clamp

FEATURES:

- solid connection between metal components of network and grounding wire
- efficient insulation cut
- enables good contact between the clamp and messenger

TECHNICAL SPECIFICATIONS:

messenger diameter	material	weight [kg]	packaging
(3 – 13) mm	body: zinc alloy bolt: corrosion protected steel	0,09	100 pieces per box

EC13 installation:

- place grounding wire in the groove
- draw the open clamp over the messenger, without removing the insulation from the messenger
- tighten the nut with hexagonal key

EC13T installation:

- place grounding wire in the groove
- draw the open clamp over the messenger, without removing the insulation from the messenger
- tighten the nut with hexagonal key until the nut breaks

ORDERING:

NP-ZU-EC13 - Grounding Clamp for 3 mm to 13 mm messenger

EW49, EWI46 GROUNDING WIRE

OPTOCODE M1250

EW49 Grounding Wire

EWI46 Grounding Wire

FEATURES:

- used for grounding the aerial networks
- EW49: four 2.05 mm diameter stranded wires, strand lead 40 mm ± 2 mm
- EWI46: contains 7 stranded flexible 0.85 mm diameter insulated copper wires with the strand lead of 40 mm ± 2 mm
- total outer diameter 4.95 mm

TECHNICAL SPECIFICATIONS:

material	weight (100 m) [kg]	packaging
copper	3	100 m drums

ORDERING:

NP-LU-EW49 - four wire strand grounding wire

TELECOM ACCESS FTTx PON

OPTOCODE M1260

ER1610R, ER2012 GROUNDING ROD

FEATURES:

- round cross section, unextendable (ER1610R) or extendable (ER2012)
- ER1610R 16 mm diameter, ER2012 20 mm diameter
- length without clamp 1m

TECHNICAL SPECIFICATIONS:

material	weight (100 m) [kg]	packaging
zinc-plated steel	1,4	100 m on a reel

ORDERING:

NP-PU-ER1610R - 16 mm Grounding Rod

ER1610R Grounding Rod

ER2012 Grounding Rod

OPTOCODE M1270

ERC16, ERC20 COPPER CLAMP

FEATURES:

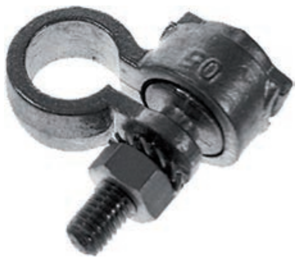
- ERC16 clump is dedicated for ER1610R grounding rod
- ERC20 clump is dedicated for ER2012 grounding rod

TECHNICAL SPECIFICATIONS:

material	weight ERC16/ERC20 [kg]	packaging
copper	0,075/0,1	100 pieces in a box

ORDERING:

NNP-KM-ERC20 - ER20 Rod Dedicated Clamp



ERC Copper Clamp

TELECOM ACCESS FTTx PON

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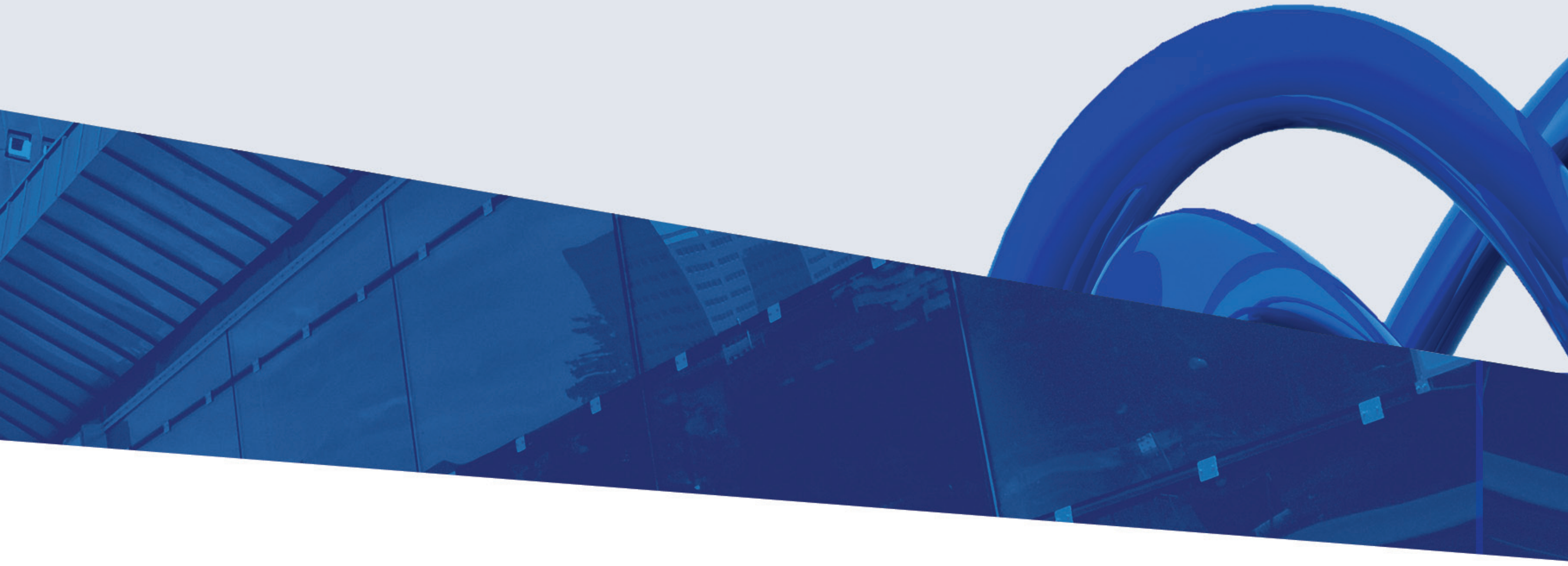
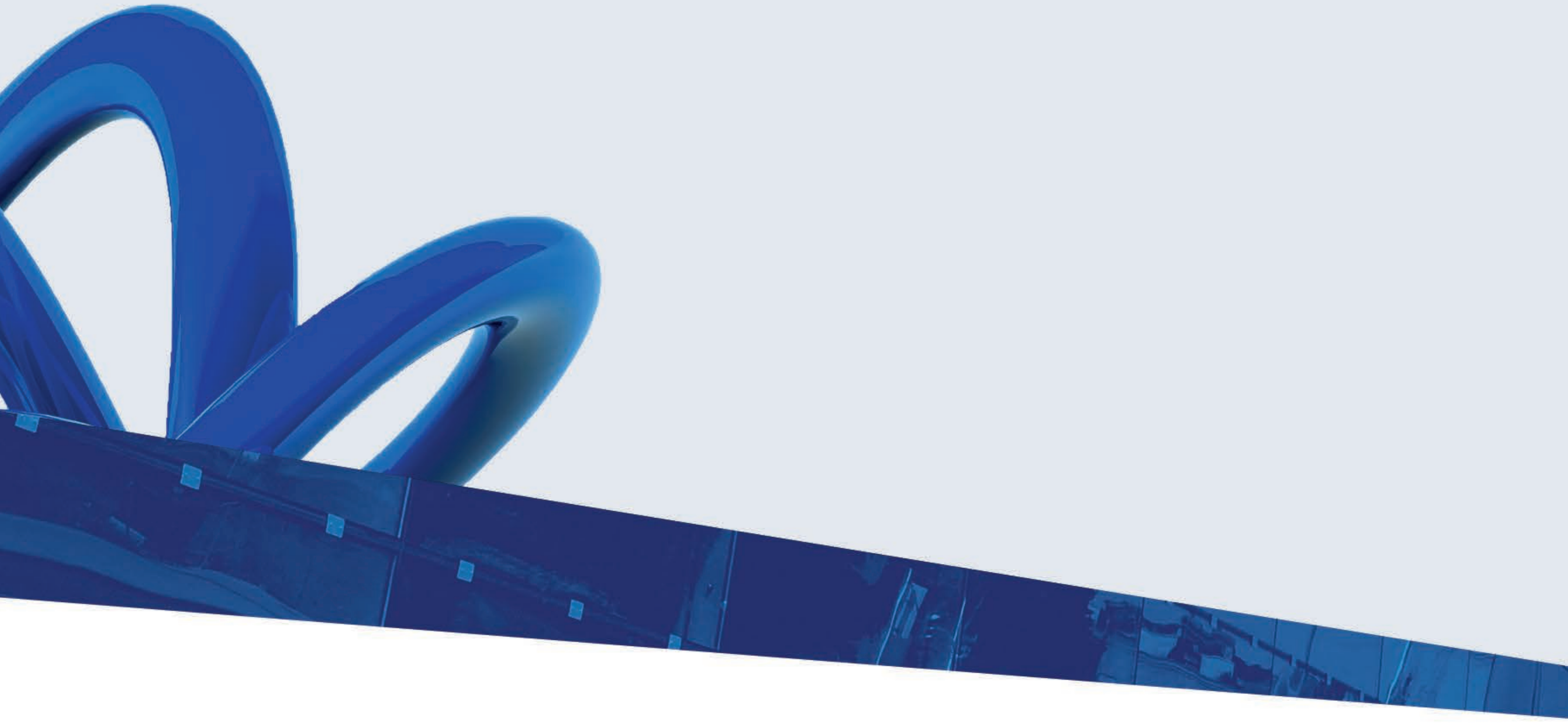


Mobile telephony and mobile data access is a regular part of our daily lives. Rapid development of advanced telecommunication systems and the growing demand for data, forces the equipment manufacturers and operators to use the innovative technologies. Beginning in the early nineties, the development of wireless access networks started with the GSM systems and was followed by UMTS, CDMA and HSPA standards further evolving towards LTE. Another wireless data transmission technique that was developed independently was WiMax (802.16d -> 802.16m). The increasing demand for data transfer speeds as well as the increase of broadcast frequencies from the range of 850 MHz to 1900 MHz for GSM to up to 3.5 GHz, forced operators to increase the number of transmitting devices. Due to the signal propagation loss increases with the broadcast frequency rise the new systems require a dense network of radio cells to provide consistent access to the network. The consequence of this is the increase of the number of antennas and base stations. In case of WiMax system the increase of the density of transmitters is even more important. The operators are therefore forced to build denser networks in order to ensure a good mobile services quality. The denser network requires more antennas and the currently used technologies using coaxial feeder cables and base stations for each antenna may prove to be unprofitable. OPTOMER offers a range of FTTA dedicated products and solutions which are presented in this part of the catalogue.

FTTA NETWORKS



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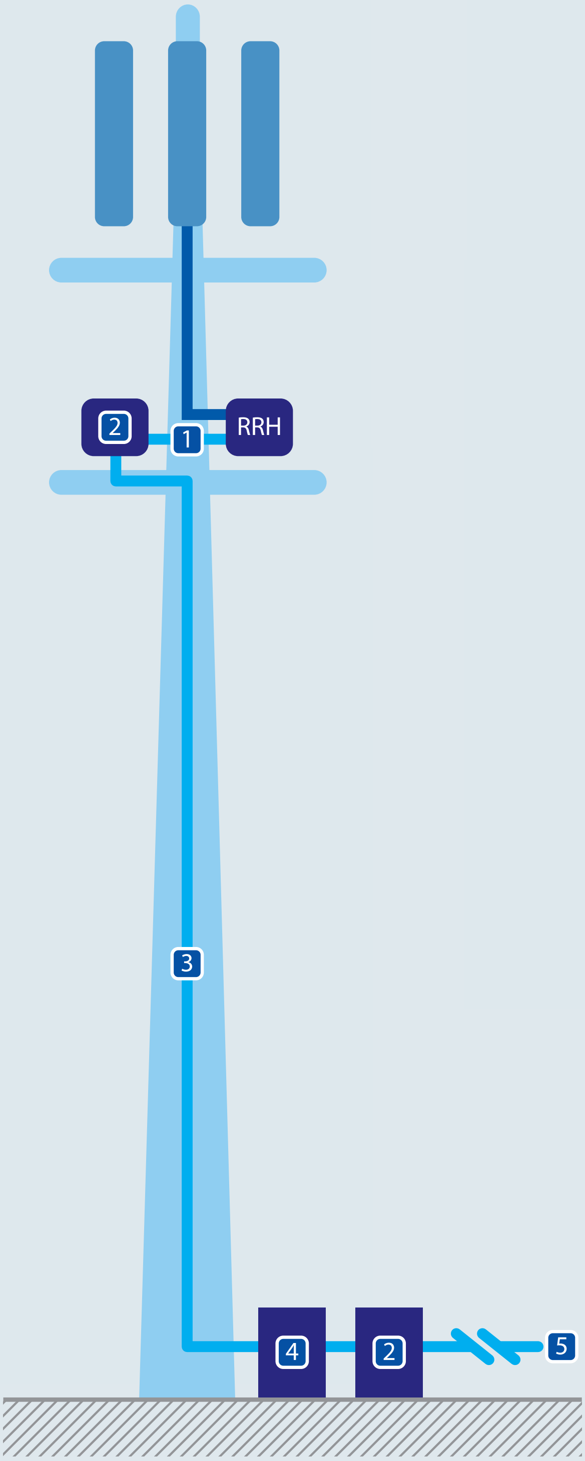
OPTICAL FIBRE IN WIRELESS RADIO NETWORKS

FTTA (Fiber To The Antenna) is a modern technology, enabling the delivery of signal to the Remote Radio Head (RRH, located near the antenna) through an optical fibre. The solution is employed in LTE, WiMAX and GSM transmission systems. Inside the RRH, optical signal is converted to a high frequency electrical signal ready to be emitted by the antenna.



FTTA solution installation scheme:

- **1** *– optical fibre cables with HeavyDuty connectors or hermetically sealed*
- **2** *– fibre optic distribution boxes*
- **3** *– multi-fibre cables, UV stabilised, terminated with connectors*
- **4** *– spare length optical fibre cable boxes*
- **5** *– base station*

OPTICAL FIBRE IN WIRELESS RADIO NETWORKS

Base stations, thanks to FTTA technology, are able to feed multiple antennas, while signal transmission through optical fibre is independent of transmitted frequency levels. There is also no limitation on the distance between a base station and antennas (for coaxial feeders 50 m distance means over 30% signal loss).

Network expansion will require more antennas, which can be fed by one base station with the aid of FTTA technique. Centralization of base stations will be advantageous in terms of occupying area (security, permissions, tenancy, etc.). The network will be more legible and easier to manage. Such a solution is definitely less expensive than buliding and operating multiple smaller base stations. Additionaly, in comparison with rigid coaxial feeder cables, optical fibre cables are more flexible, smaller in outer diameter, cheaper to buy and install.

Increasing the density of antenna arrangement enforces utilization of various architectural objects, not only antenna towers. That will make it difficult to use thick coaxial cables. The solution is again optical fibre technology.

- Main advantages of FTTA solutions over traditional coaxial cable:
- lower price of optical fibre cable in comparison with expensive coaxial feeders
- lower energy consumption implying lower operating costs
- lower demand for signal amplification
- convenient installation
- less problems with electromagnetic compatibility
- environmental-proof

OPTOMER offer suitable products and solutions, necessary for modern FTTA networks. We may provide outdoor fibre optic cables terminated with HeavyDuty connectors of high environmental protection (RDC, ODVA). There are also available cables terminated with E 2000, F-3000, SC or LC connectors, equipped with PG cable glands to seal distribution box cable entries.

The choice of appropriate fibre optic cable termination is dependent on active devices (RRH). They may be equipped with HeavyDuty connectors or support universal SFP plugs where LC connectors can be plugged in.

In order to conveniently manage optical fibres in FTTA technology, we offer branch boxes for branching multi-fibre cable from base station to connect the fibres to the consecutive Radio Heads. The cable length and number of fibres are chosen each time for particular solutions.

As a supplement to the FTTA offer, the following standard optical fibre products are also applicable:

- - dostribution frames, street cabinets PU-5, PU-10, PU-20
- - 19” Patch Panels as the equipment for distribution frames
- - excess cable racks
- - high connector density cabinets - PSU-1, STP in special design dedicated for telecomm containers

Fibre optic equipment, employed in FTTA systems, is dependent on active devices used in each specific case. We offer full support and counselling in the choice of appropriate FTTA equipment.

PSH-4 FIBRE OPTIC OUTDOOR DISTRIBUTION FRAME

OPTOCODE Y1010

Fibre optic outdoor distribution frame PSH-4

FEATURES:

- mounted on LTE, WiMAX radio antenna poles
- possibility of installation of hermetic Heavy Duty connectors
- IP66 rated housing
- compatible with SC or LC connectors
- possibility of sealing the cable entries
- possibility of installation of cable glands with the diameter range of 5 mm to 12 mm
- possibility of passing the SC and LC connectors through cable glands

EQUIPPED WITH:

- cable organisers
  - PG 13.5 cable entry - cable diameter 8-12 mm
  - triple PG 21 cable entry - cable diameter 5-8 mm
  - wall mounting brackets with screws (optional, purchsed separately)
- installation and handling instructions
- installation kit

TECHNICAL SPECIFICATIONS:

	PSH-4
number of splice trays	-
max. number of splices	-
number of patching fields	6 SC, E2000 or 6 LC duplex
connector standard	SC, LC
number of outdoor cable entries	1x PG 13.5, 2x PG 21
max. diameter of input cable [mm]	5-12
dimensions: width/height/depth [mm]	180/255/63
weight [kg]	1
housing material/colour	PC/RAL 7035
mechanical protection IK	IK08
environmental protection IP	IP66

ORDERING:

PSH-4/6/LC - outdoor distribution frame, equipped with 6 LC connectors, designed for FTTA systems

TELECOM MAN WAN

OPTOCODE E1070

PSH-3 FIBRE OPTIC OUTDOOR DISTRIBUTION FRAME

FEATURES:

- outdoor and/or indoor use
- for application in industrial environments and/or telecom manholes
- 12 fibre capacity from 2 cable entries
- adapted to FTTA installations
- IP65 rated environmental protection
- full front access to the splice tray

EQUIPPED WITH:

- splice tray KSQ, cable gland DP 16 H
- rubber cable gland, cable ties
- wall mounting brackets with screws (optional, purchased separately)
- installation and handling instructions
- installation kit

TECHNICAL SPECIFICATIONS:

	PSH-3/12
number of splice trays	1 x KSQ
maximum number of splices	12
adapter capacity	12
connector standard	E-2000, SC, FC, ST
recommended pigtail length [m], 0.9 mm buffered fibre	1,5
recommended pigtail length [m], 2 mm cable diameter	-
number of outdoor cable entries	2
maximum diameter of input cable [mm]	14
dimensions: width/height/depth [mm]	140/230/90
weight [kg]	0,7
housing material/colour	ABS or PC/RAL 7035
mechanical protection IK	IK07/IK08
environmental protection IP	IP65

Outdoor Fibre Optic Distribution Box PSH-3

ORDERING:

PSH-3/12/E/SC - Outdoor Fibre Optic Distribution Box for 12 pigtails and 12 adapters E2000 or SC

TELECOM MAN WAN

FTTA SYSTEM PATCHCORDS

OPTOCODE Y1020

FEATURES:

- connectivity between base station and distribution box on RHH antenna pole
- signal transmission up to RRH
- possibility of installation of PG cable glands on connectorised cable
- self-centering connector body with connection assist keying
- compliant with EN 50516-2-1 standard
- durable construction
- environmentally sealed optical fibre connection system
- hermetically sealed connection
- connectors for cables of 2 up to 12 fibres
- IP67 protection
- applicable in distribution boxes and RRH Radio Heads

TECHNICAL SPECIFICATIONS:

	Heavy Duty 1000	Heavy Duty 600	Heavy Duty 200-400	Heavy Duty SC-RJ	HeavyDuty RDC	ODVA
ferrule	12 x 2.5 mm, MM, SM PC or ceramic APC	6 x 2.5 mm, MM, SM PC or ceramic APC	2 or 4 x 2.5 mm, MM, SM PC or ceramic APC	2 x 2.5 mm, MM, SM PC or ceramic APC	12 x 1.25 mm ceramic	2 x F-3000 connectors or 2 x LC connectors with 1.25 mm MM, SM PC or hybrid APC ferrule
electric connectors	2x1,5 mm		-	-	-	-
fibre type	9/125, 50/125, 62.5/125, 200/230 – 1 mm					9/125
housing material	nickeled brass			plastic	nickeled brass	plastic
cable	hybrid breakout or loose tube - 6-16 mm simplex 1.7-2.2 mm	hybrid breakout or loose tube - 6-16 mm simplex 1.7-2.2 mm	ø6-10 mm	ø5-8 mm	mini breakout 4-7 mm, patchcords 1.7 or 2.1 mm	patchcords 1.7 or 2.1 mm
instertion loss [dB]	0.3/max. 0.6	0.2/max. 0.4	0.25/max. 0.6	0.25/max. 0.5	0,25	0.2/max. 0.5
return loss [dB]	>40 for PC SM >55 for APC SM		>40 for PC SM	>40 for PC SM	>50 for SM	>40 for PC MM >50 for PC SM >70 for SM APC
temperature of operation [°C]	-40 to +60		-40 to +125	-40 to +75	-40 to +125	-40 to +85

ORDERING:

ODVA - hermetic connector on 2-fibre cable, equipped with 2 LC connectors

RDC - hermetic connector RDC on 2-fibre cable with a socket terminated by LC connectors

TELECOM MAN WAN

Heavy Duty 200-400

HeavyDuty 1000

Heavy Duty 600

Heavy Duty SC-RJ

HeavyDuty RDC

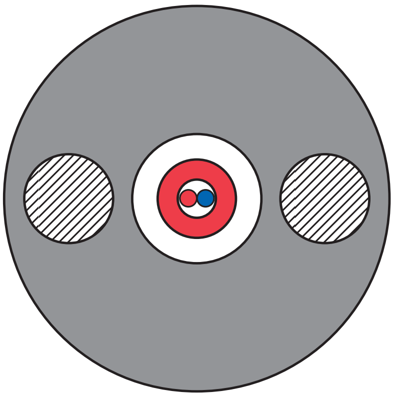
ODVA

OPTOCODE M1090

UNC1630, UNC1634 CABLE

FEATURES:

- outdoor cable
- reinforced construction
- 1 or 2 optical fibres in NUC1630 cable
- 1 up to 12 fibres in UNC 1634 cable
- UV stabilised
- fibres in 900 µm loose tube
- easily strippable 1m/min
- longitudinal glass fibre strength members
- used for connecting RRH with a distribution box/cabinet
- used for connecting base station with distribution box/cabnet near RRH
- available in single and multi -mode versions
- customer drop cable with LSOH sheath under the outer sheath of NC1629 cable



UNC1630 CABLE

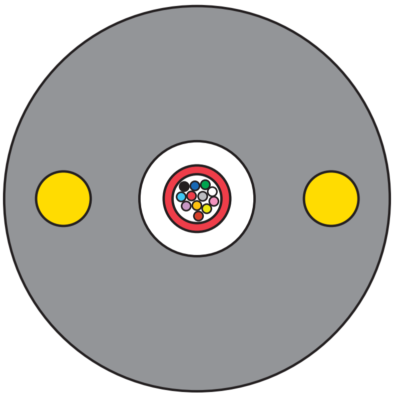
TECHNICAL SPECIFICATIONS:

		UNC1630		UNC1634
		1 x N7842A fibre	2 x N7843A fibre	1 up to 12 x N7841A fibre
temperature range [°C]:	transportation and storage	-40 to +70		
	installation	-5 to +50		
	operation	-40 to +70		
maximum pulling force [N]		800		
crush resistance [N/cm]		200		
nominal bending radius [mm]		60		
standard packaging		drums of 2100 or 4200 m		drums of 2, 4, 6 or 8 km
nominal diameter [mm]		6,0		6,0
nominalna weight (kg/km)		31		31,5

ORDERING:

NP-UNC1630 N7843A – optical 2-fibre cable, applicable in FTTA system

TELECOM MAN WAN



UNC1634 CABLE

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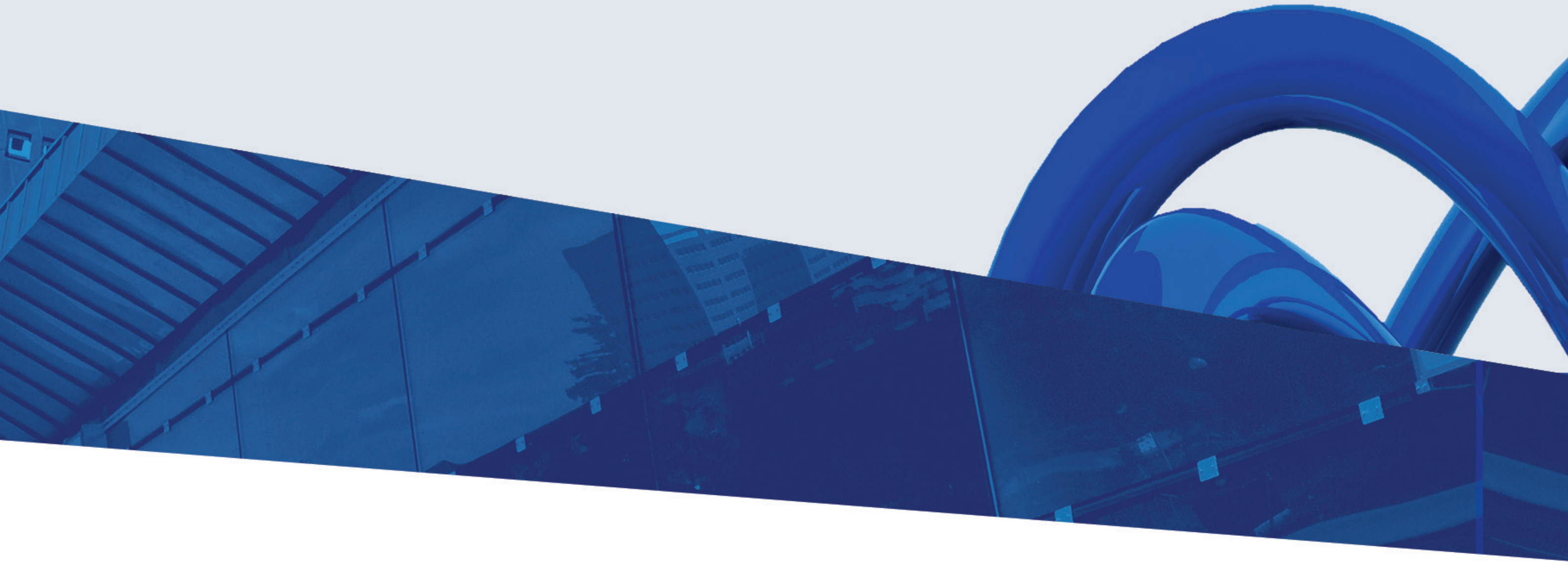
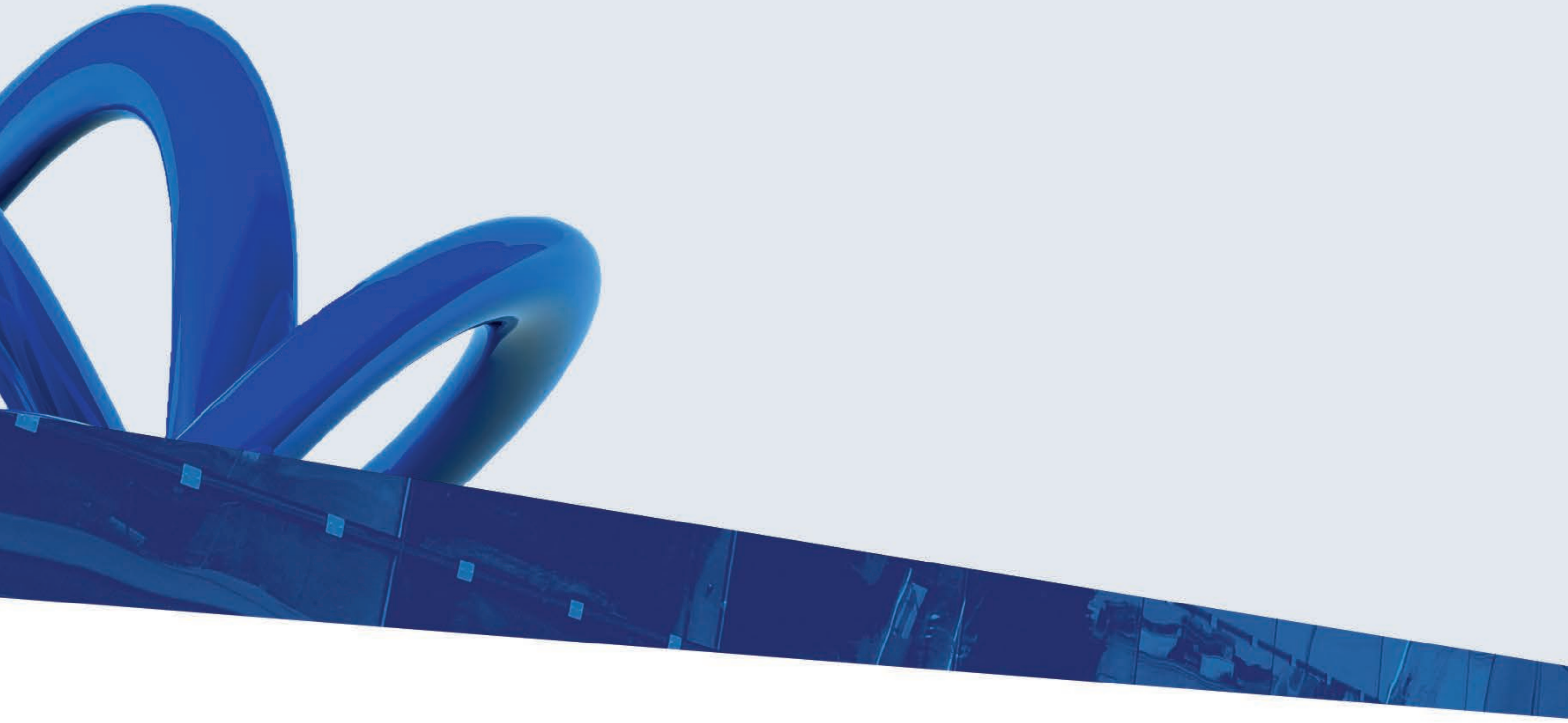


Nowadays, optical fibres as the transmission medium are widely used in telecom and data transmission applications. A vast amount of fibres in modern networks mean the need for reliable and efficient tools for optical cable and fibre preparation, fibre splicing, connector cleaning etc. Regardless of the experience and knowledge of the installers, the right tools and accessories are required to perform the fibre optic cable installation correctly.

Appropriate tools help the installers to work safely and efficiently. This saves time and money and allows to build a reliable fibre optic network. Regardless of the size of the network the use of proper tools for installation and maintenance is a worthwhile investment.

With many years of experience in the field of fibre optics, OPTOMER offers support in selection of the tools that best meet the customer needs. This section presents fusion splicers, video microscopes as well as tools and accessories necessary for fibre cables preparation, installation and maintenance.

TOOLS AND ACCESSORIES



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FIBRE OPTIC OUTDOOR CABLE TAGS 183

ZEUS SPLICING KIT

OPTOCODE P1010

ZEUS splicer - kit

FEATURES:

- fast assebly of high quality fibre optic connections (splices and connectors)
- splicing and ferrule termination
- designed for field operation
- battery capacity for 200 splices on one charging
- preprogrammed parameter for both MM & SM fibers
- low attenuation and reflection losses of assembled connectors
- ferrule available in PC and APC versions
- connectorterminating cables of diameter 1.6 to 3.1 mm and on 900 um fibre or 250 µm primary coating
- precision „V-groove" alignment
- presplice fiber cleaning function
- adjustable arc power
- integrated fiber retention check

EQUIPPED WITH:

- "crocodile alberino" field fusion ferrule assembly
- holder for Alberino Crocodile 1.25mm and for 900µm tight buffered fibre
- fiber holder 250 µm, fiber holder 900µm tight buffered or loose tube and holders for cables of 1.6 - 3.0 mm diameter
- assembling tool E2000™, SC, ST™, FC

TECHNICAL SPECIFICATIONS:

power supply	AC/DC adapter: input: 90-240 V, 1.2 A, 50/60 Hz, output: 16V Battery: -12V NiMH 1800 mAH
dimensions and weight	splicer with batteries: 140 mm / 200 mm /100 mm, 2 kg complete kit with with travel case: 680 mm / 510 mm / 355 mm

ORDERING:

SSD ZEUS - connector field assembly kit

TELECOM ACCESS Industry

Durable travel case

OPTOCODE P1020

DCU FIBRE OPTIC CUTTER

FEATURES:

- onetouch system for ease and simplicity
- typical cutting angle precision: < 0.5°
- adjustable cutting length from 4 to 23 mm in 0.01 mm steps
- cleave length precision +/- 0.05 mm
- multiple position diamond blade
- field replaceable blade
- adjustable blade height

EQUIPPED WITH::

- DCU cleaver
- Miller fiber stripper
- 250 µm fiber holder

TECHNICAL SPECIFICATIONS:

fibre types	single SM or MM fibre of 125 µm nominal diameter
cutting angle	0°
blade	6 position diamond blade
dimensions	55 mm / 65 mm / 100 mm (270 mm / 230 mm / 80 mm in travel case)
weight	0,57 kg (1,1 kg in travel case)

DCU cleaver unit for optical fibres

Available fiber and cable holders:

- 250, 600 and 900 µm tight buffered fiber
- 900 µm loose tube fiber
- 1.8-3.0 mm cable

ORDERING:

DCU - ZEUS cleaver unit

TELECOM ACCESS Industry

FITEL S FUSION SPLICERS

OPTOCODE P1030

FEATURES:

- built-in FTTH fibres (G.657A/B2) splicing programmes
- standard universal holders enable splicing fibres in loose isolation
- direct connector to fibre splicing
- min. 200 splices on one battery charging
- fast splice protector heating (<25 s)
- performs under tought environment conditions (IP52)
- optional tripod with worktable
- fast and convinient splicing
- FITEL S178 features precise, active core alignment
- FITEL S153 actively aligns clads, a compromise between core and fixed vgrove alignments
- FITEL S123 aligns with use of fixed v-groves, implying less movable parts which results in high durability

FITEL S158 splicer

EQUIPPED WITH:

- splicer
- one step handheld high precision cleaver
- AC cable cord and adapter
- carrying case
- 2 internal batteries
- battery charger
- electrode sharpener

TECHNICAL SPECIFICATIONS:

	S178	S153	S123
alignment type	active core alignment	active V-groove (clad alignment)	fixed V-groove (clad alignment)
alignment description	core discovery and alignment (regardless of centricity of cores in claddings)	cladding discovery and core alignment (assuming centricity of cores in claddings)	‚fixed V-grove’ system of ‚crosshair’-like immobile V-groves allowing for cladding alignment
average splice loss [dB]	0,02	0,04	0,05
splice time [s]	7	9	13
max. number of splices on one battery pack	up to 200	up to 200	up to 70
splice protection heating	YES	YES	YES
compatible with splice-on-connector (SOC)	YES	YES	YES
exchangeable fiber holders	YES	YES	YES
universal holder	YES	YES	YES

FITEL S153 splicer

ORDERING:

FITEL S178 - Fitel active core alignment splicer

TELECOM ACCESS FTTx Industry

OPTOCODE P1040

FSM-60S SINGLE FIBRE ARC FUSION SPLICER

FEATURES:

- high durable designed for tough environments
- auto-fibre identification
- real-time arc auto-calibration
- core alignment system (PAS)
- splice loss estimation
- mechanical proof test
- auto-smart tube heater
- 300x times magnification
- storage of splice result (2000 last splices)
- splice image capture facility
- automatic splicing after closing
- adjustable LCD position with buttons on both sides of the device enable convinient bi-directional operation
- 100 splicing programmes for pre-set modes and user programmable modes

PAUSE
L=0.4°
0.2°
R=0.5°
SM
SM
How to operate
Fujikura
Arc Fusion Splicer
RESET
SET
ARC
X/Y

FSM-60S Splicer

EQUIPPED WITH::

- Arc Fusion Splicer
- AC Power Cord
- Carrying Case
- AC Adaptor/Battery Charger
- Spare Electrodes
- J-Plate

TECHNICAL SPECIFICATIONS:

power supply	automatic selection of power supply, AC: 100 - 240 V, DC: 10 - 15 V (ADC-11 module) or 13.5 V (BTR battery module)
dimensions and weight	136 mm / 161 mm / 143 mm, 2.3 kg with ADC-13 universal power supply module, 2.7 kg with BTR-08 battery module

ORDERING:

FSM-60S - Single Fibre Arc Fusion Splicer FUJIKURA

TELECOM ACCESS FTTx Industry

Carrying case

ND FIBRE OPTIC CONNECTOR INSPECTION MICROSCOPE

OPTOCODE P1050

MI-DIAMOND FIBRE OPTIC CONNECTOR INSPECTION MICROSCOPE

FEATURES:

- compact, light-weight microscope
- convenient for inspecting ferrule and fibre endfaces in the field or in the laboratory
- very good optical parameters guarantee clear view of ferrule's endface
- battery powered lamp for the integral illumination system
- foldback rubber eyecup for spectacle wearers
- eliminates all reflections given by incident lights into the eye piece
- includes a built-in infrared filter protecting human eye against laser light
- features interchangeable holders to accommodate ferrules of different diameters
- different adapters dedicated for every connector standard (AD/E2000, AD/SC, AD/FC, AD/ST)
- built-in adapter for 2.5 mm ferrule
- control adapter for opening E-2000 connectors available as auxiliary equipment

TECHNICAL SPECIFICATIONS:

magnification	300x
dimensions	300 mm / 75 mm / 40 mm
ferrule diameter	2,5 mm
power supply	2 x LR 14 1.5 V battery

ORDERING:

MI-DIAMOND - fibre optic connector inspection microscope with universal adapter for 2.5 mm ferrules

OFS-300 FIBRE OPTIC CONNECTOR INSPECTION MICROSCOPE

OPTOCODE P1060

OFS-300 FIBRE OPTIC CONNECTOR INSPECTION MICROSCOPE

FEATURES:

- universal adapter for 2.5 mm ferrules
- one set of batteries ensures 60 h of uninterrupted operation
- dedicated holder and user manual included
- OFS-300 are available in two versions, 200x or 400x magnification

TECHNICAL SPECIFICATIONS:

	OFS-300-200C	OFS-300-400C
magnification	200	400
protective filter	Scott KG3	
operating temperature [°C]	0 ~ +50	
storing temperature [°C]	-20 ~ +50	
power supply	2xAA alkaline batteries	
weight [kg]	0.67	
dimensions	130 mm / 50 mm / 200 mm	

ORDERING:

OFS-300-400C -inspection microscope, 400x times magnification

FIS FIBRE OPTIC CONNECTOR INSPECTION MICROSCOPE

OPTOCODE P1070

FIS FIBRE OPTIC CONNECTOR INSPECTION MICROSCOPE

FEATURES:

- light and ergonomic body
- white LED provides coaxial illumination
- two 3 V lithium batteries ensure 50 h of continuous operation
- 200x or 400x magnification
- includes universal adapter for 2.5 mm ferrules (other adapter types are available separately)
- very convinient (soft grip and high reliablility)

TECHNICAL SPECIFICATIONS:

magnification	200x or 400x
magnification	2 x LR 14 1.5 V battery
ferrule diameter	2,5 mm

ORDERING:

FIS-400 - FIS microscope with 400x times magnification

TELECOM ACCESS Industry

OPTOCODE P1080

VIM - DIAMOND VIDEO INSPECTION MICROSCOPE

FEATURES:

- can be used as a laboratory microscope or a portable field inspection tool
- integrated end-face illumination
- enables inspection of both, unmated connectors as well as in-adapter connectors
- vast variety of adapters for 2.5 mm or 1.25 mm (PC and APC) ferrules
- 200x and 400x magnification versions
- ”one hand” operation
- inspection probe can be used with a 3.5” colour display unit with a magnetic holder
- powered by a rechargeable battery, or directly connected to a PC via USB 2.0 cable without the need of an external power supply

CONFIGURATIONS:

- inspection kit with set of connector cleaning tools and travel case
- inspection kit in soft case

EQUIPPED WITH:

- color display unit with magnetic stand and wrist band fixation
- rechargeable battery pack with magnetic stand and battery clip (belt style)
- video inspection probe
- USB 2.0 cable and image capturing software
- advisable additional equipment: Visual Fault Locator (VFL)

Video inspection microscope VIM-DIAMOND

TECHNICAL SPECIFICATIONS:

power grid supply	AC 100-240 V, 50/60 Hz
battery power supply	DC 9 V NiMH battery, 93/75/40 mm, 0,5 kg
screen	3.5” TFT active matrix color display unit
inspection probe	length: 170 mm, diameter: 38 mm, 0.4 kg
dimensions and weight	complete kit with travel case 540/420/210 mm, 6 kg

ORDERING:

VIM-DIAMOND - Diamond video inspection microscope (kit with LCD + set of adapters)

OPTOCODE P1090

CI-1100, DI-1000 - VIDEO INSPECTION MICROSCOPES

FEATURES:

- handy inspector of fibre optic adapters and ports
- safe inspection of active connectors
- detectable resolution to 0.5 µm (corresponds to 400x magnification)

KONFIGURACJE:

- CI-1100 - complete fibre optic field inpector; probe with LCD screen and battery allows for comfortable field operation under any environmental condition
- DI-1000 - USB probe for PC, laptop or OTDR

CI-1100 - video inspection microscope

TECHNICAL SPECIFICATIONS:

	CI-1100	DI-1000
power supply	built-in 9.6 V battery or power grid supply	USB port
field of view	425 µm x 320 µm (standard) 425 µm x 320 µm (standard) 640 µm x 480 µm (lower magnification)	400 µm x 300 µm
resolution	0,5 µm	
light source	blue LED	
dimensions	probe: diameter 35 mm, length 175 mm monitor: 3.5” TFT-LCD 105/90/45 mm (closed)	diameter: 35 mm length: 175 mm
weight	probe: 200 g, monitor: 255 g (without battery)	200 g

ORDERING:

CI-1100 - video inspection microscope with LCD screen

DI-1000 - video inspection microscope

TELECOM ACCESS FTTx Industry

HUX FERRULE CLEANER

OPTOCODE P1100

HUX ferrule cleaner

FEATURES:

- cleans ferrule endfaces when inside adaptors
- designed to clean ferrule tips without the need to remove the connector from the adaptor
- removes all dirt/contamination from ferrule's endface in area of fibre
- no need to open the enclosure
- approx. 500 cleans from one Hux Cleaner
- two tip sizes available for ferrules of diameter 2.5 mm or 1.25 mm

ORDERING:

HUX 1.25 - HUX 1.25 mm ferrule cleaner

SMART CLEANER FERRULE CLEANER

OPTOCODE P1110

SC-FCT-ST

LC-MU

FEATURES:

- cleans ferrule endfaces when inside adaptors
- designed to clean ferrule tips without the need to remove the connector from the adaptor
- removes all dirt/contamination from ferrule's endface in area of fibre
- no need to open the enclosure
- vast variety of cleaners allows for cleaning all of the most popular connector types

ORDERING:

SMART CLEANER - 2.5 mm ferrule cleaner

CZZO, TCZ, PSP, ISP, CHBP - CLEANING TOOLS

OPTOCODE P1120

CZZO *TCZ*

CHBP

ISP-200

CZZO
- fibre optic connector cleaner
- necessary equipment for every maintanance operator
- intended for cleaning connector ferrule endfaces with TCZ tape

PSP-400
- 400 ml of canned, high purity compressed air
- removes particles from normally inaccessible areas

ISP-200
- 200 ml of canned isopropyl alcohol for cleaning fibres, connectors and fibre optic accesories

PDCF
- ferrule endface cleaning brush

SDCA
- adapter mating sleeve cleaning brush

CHBP
- lint free wipes
- provide superior cleaning of fibre optic connector ferrules without risk of scratching
- made of pure cellulose, do not leave paper fragments on cleaned surfaces

ORDERING:

CZZO - Fibre optic connector cleaner

TELECOM ACCESS Industry

OPTOCODE P1130

WZKCZD FIELD CONNECTOR CLEANNESS CONTROL SUITCASE KIT

FEATURES:

- set of necessary tools for control and cleaning optical fibre connectors in optical networks
- essential accessories used by fibre optic networks servicing teams

EQUIPPED WITH::

- Diamond fibre optic connector inspection microscope
- fibre optic connector cleaner CZZO
- canned, compressed air
- canned isopropyl alcohol
- lint free wipes
- ferrule endface cleaning brush
- adapter mating sleeve cleaning brush
- case

Specifications subject to change wihout notice. Modifications shall not affect the functionality.

ORDERING:

WZKCZD - travel case kit for maintanance and cleanness control of fibre optic connectors with Diamond’s microscope

Field connector cleannsess control suitcase kit

OPTOCODE P1140

WMOKS FIBRE OPTIC CABLE INSTALLATION KIT

FEATURES:

- set of necessary tools for control and cleaning optical fibre connectors in optical networks
- essential accessories used by fibre optic networks servicing teams

EQUIPPED WITH::

- outdoor cable jacket removing knife AM-1
- outdoor cable jacket removing knife AM-2
- loose tube coax stripper IDEAL 45-163
- loose tube coax stripper IDEAL 45-164
- loose tube stripper with adjustable blades JOKARI PWS-003
- buffer tube (0.9 mm) stripper CK-0.5
- primary coating stripper (250 µm) Miller fo 103-s
- primary coating stripper (250 µm) and outer sheath stripper CFS-2
- fibre primary coating solvent (chemical stripper)
- indoor cable jacket stripper
- side cutting nippers
- kevlar cutters Fiskars 9874
- cleaning tool for ferrul front face CZZO
- canned air
- canned ispropyl alcohol
- universal scissors
- lint free cleaning wipes for fibre optic connectors cleaning
- heat gun steinel HG 3000 SLE
- reflecting nozzle for heat gun
- self adhesive insulating tape
- measure tape 5 m
- knife
- cable tie tensioning gun
- alcohol dispenser for tissue moistening
- case

Specifications subject to change wihout notice. Modifications shall not affect the functionality.

ORDERING:

WMOKS - fibre optic cable installation suitcase kit

Fibre optic cable installation suitcase kit

TELECOM ACCESS Industry

KNIVES AND STRIPPERS FOR OPTICAL FIBRE CABLES

OPTOCODE P1140

PWS-003

CK-0,5

FISKARS 9874

45-163

AM-1

MES-202

AM-2

Side cutting nippers

Flat knife

FISKARS 9874 CUTTERS

- for cutting kevlar yarn

NDK UNIVERSAL CUTTERS

- for cutting fibre optic cables and strength members

FLAT KNIFE WITH CHANGEABLE BLADES

- standard equipment in WMOKS suitcase

SIDE CUTTING NIPPERS

- standard equipment in WMOKS suitcase

45-163 STRIPPER (SMALL)

- designed to blaze and strip indoor cable external sheath and outdoor cable loose tubes with up to 6,4 mm diameter

45-164 STRIPPER (LARGE)

- designed to blaze and strip indoor or outdoor multifibre cable external sheath with 6,4 to 14.3 mm diameter range
- each knife has a spare replacement blade

MES-202 INDOOR CABLE JACKET STRIPPER

- enables safe stripping of indoor cable external sheath and outdoor cable loose tubes with 1 mm to 4 mm diameter range

CFS-2 STRIPPER

- designed to strip and remove outer cable jacket and 250 µm primary fibre coating

PWS-003 STRIPPER

- designed to strip and remove 250 µm primary fibre coating and 900 µm fibre buffer
- adjustable blade diameter 0.3 -1 mm

CK-0.5 STRIPPER

- designed for precise stripping and removing 900 µm fibre buffer

FO 103-S STRIPPER

- designed to strip and remove 250 µm primary fibre coating

AM-1 KNIFE (OUTDOOR CABLE JACKET REMOVING)

- equipped with adjustable blade the knife is suitable for stripping jackets of cables with outside diameter range of 8 mm to 28 mm
- the blade automatically turns to the direction in which the tool is moved
- each knife has a spare replacement blade

AM-2 KNIFE (OUTDOOR CABLE JACKET REMOVING)

- high quality knife enables safe jacket removal by axial cut without threat to fibres

ORDERING:

Miller FO 103-S - primary coating stripper (250 µm)

MK III A CABLE TIE TENSIONING GUN

OPTOCODE P1150

MK III A cable tie tensioning gun

FEATURES:

- provides safe quick and easy cable ties tensioning
- MK III A type

ORDERING:

MK III A - cable tie tensioning gun

TELECOM ACCESS Industry

OPTOCODE P1170

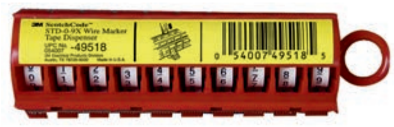
OZRWL CABLE MARKER ROLL DISPENSER

FEATURES:

- used for tagging single fibres
- 10 rolls with 0-9 digits
- dispenser with tape cutting blades
- 670 digits in one roll

ORDERING:

OZRWL - (0 - 9) symbol dispenser, (200 pcs. of each symbol)
OZRWL supply - supplementary marker roll, (200 pcs. of each symbol)


3M ScotchCode
STD-0-9X Wire Marker Tape Dispenser
UPC No. -49518
0 1 2 3 4 5 6 7 8 9

OZRWL CABLE MARKER ROLL DISPENSER

OPTOCODE P1180

OZNL CABLE MARKERS ON STICK DISPENSER

FEATURES:

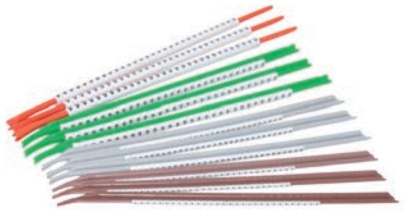
- the markers slide directly onto the cable jacket and fit in position thanks to its resilience
- one stick holds 30 markers with the same digits or letters

TECHNICAL SPECIFICATIONS:

- digit markers (0 - 9) on a rod, for tight buffered cables
- The available diameter ranges are as follows:
  - 1.1 mm to 1.4 mm
  - 1.4 mm to 1.9 mm
  - 1.9 mm to 2.6 mm
  - 2.6 mm to 3.2 mm

ORDERING:

OZNL (1.1 - 1.4) 4 - digit markers (digit 4) on a (1.1 - 1.4) diameter stick



OZNL CABLE MARKERS ON STICK DISPENSER

OPTOCODE P1190

FIBRE OPTIC OUTDOOR CABLE TAGS

OZ-1 cable tag

- dimensions: 250x80 mm
- fixing to the cable with two cable ties
- marked with signs „WARNING LASER RADIATION" and „FIBRE OPTIC CABLE"
- custom information field for unerasable ink

OZ-2 cable tag

- dimensions: 200x50 mm
- fixing to the cable with two cable ties
- marked with signs „WARNING LASER RADIATION" and „FIBRE OPTIC CABLE"
- custom information field (network relation, cable type, owner, contractor, year) for unerasable ink

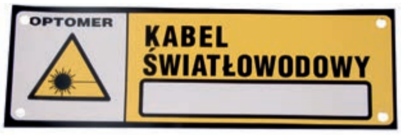
OZ-3 cable tag

- dimensions: 120x30 mm
- fixing to the cable with two cable ties
- marked with signs „WARNING LASER RADIATION" and „FIBRE OPTIC CABLE"
- custom information field (cable number) for unerasable ink

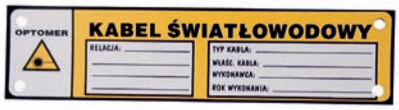
ORDERING:

OZ-1 – line cable tag

TELECOM Industry


OPTOMER
KABEL ŚWIATŁOWODOWY

OZ-1 cable tag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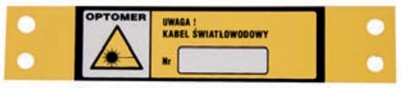
RELACJA:
TYP KABLA:
WŁAŚC. KABLA:
WYKONAWCA:
ROK WYKONANIA:

OZ-2 cable tag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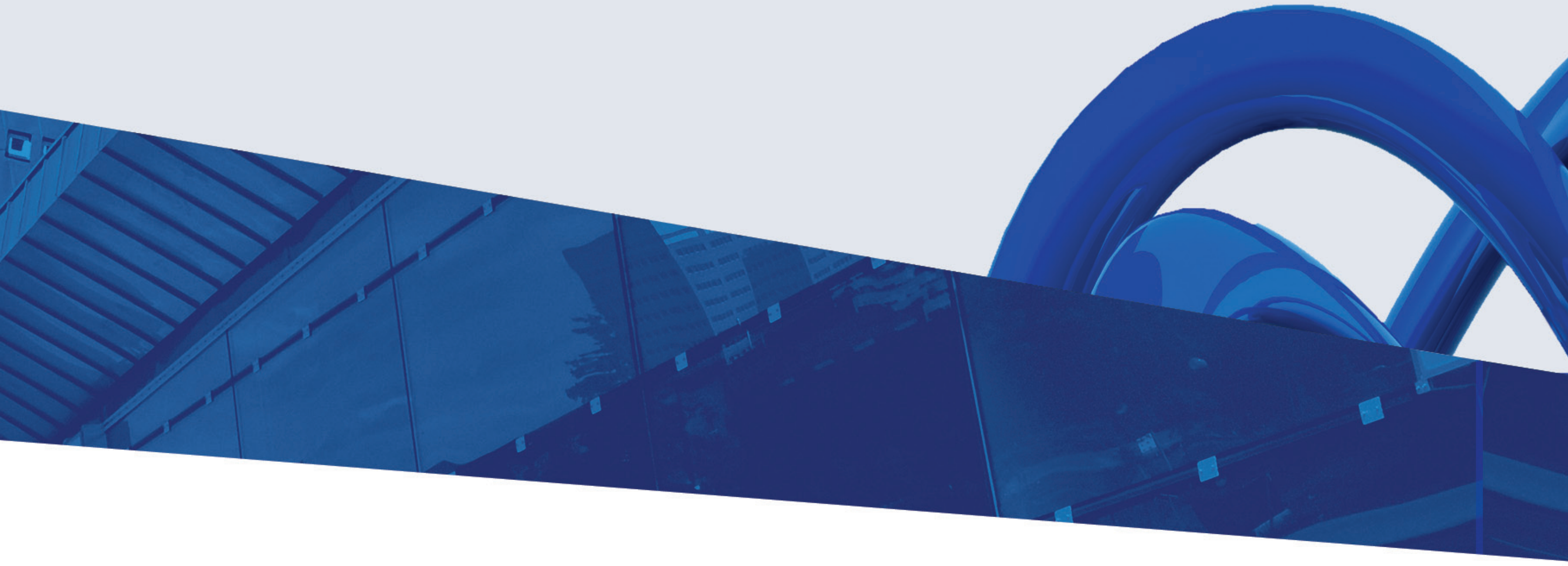
OZ-3 cable tag

10

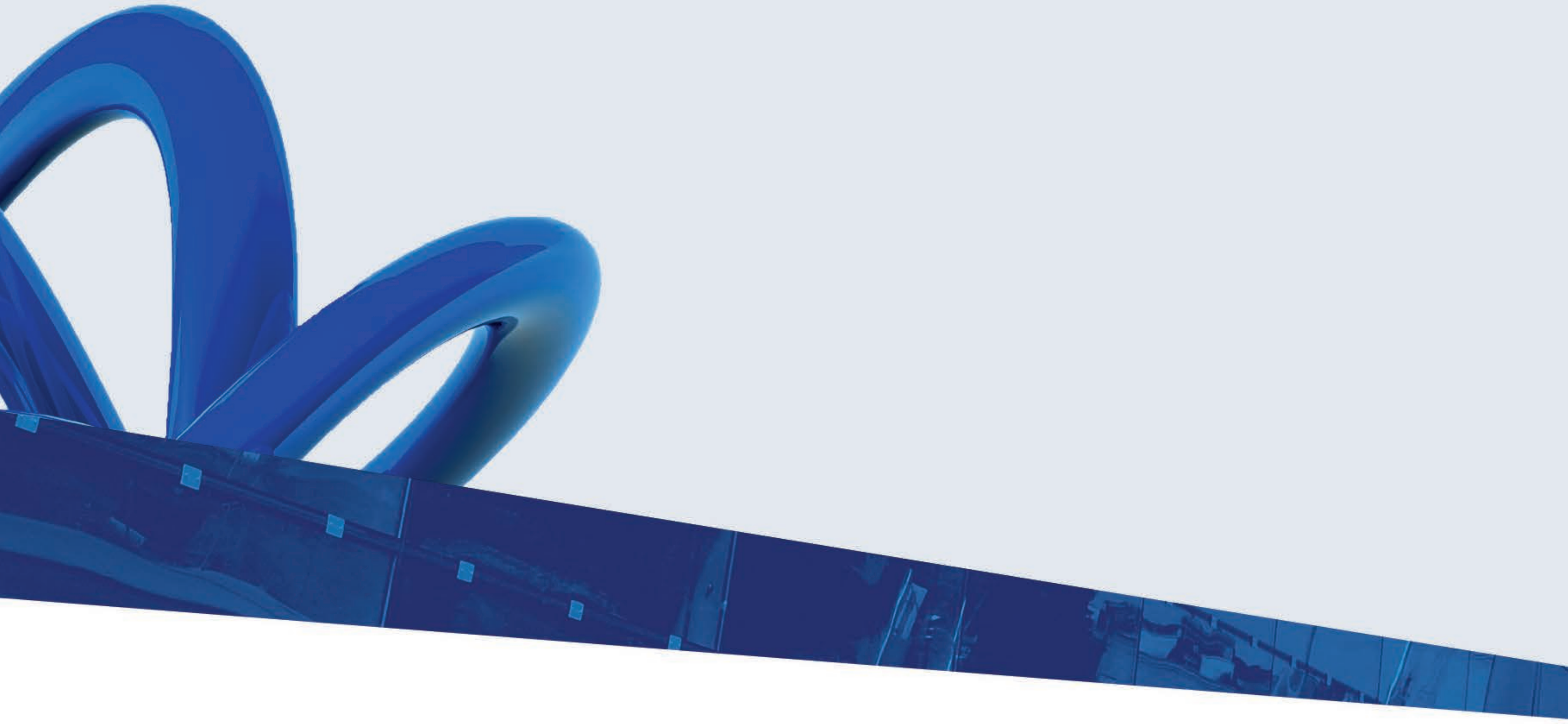


Shortening the subscriber loop, associated with broad-band services provided to the end users in Fibre To The Home (FTTH) networks is the fact. Increasingly the entities involved in telecommunication and data transmission have to become familiar with fibre optic technology. Companies intending to operate effectively in the fibre optic market, need to have proper knowledge on optical fibre handling and possess the necessary equipment and tools including fibre optic measuring devices.

Regardless of whether we want to check attenuation of the cable section, locate the fault in the fibre optic route or perform the hand-over report, the specialized measuring instruments are necessary.

Optomer offer includes measuring equipment dedicated for outdoor applications as well as devices for quality control, scientific and laboratory applications. OPTOMER with years of experience in the use and distribution of modern measuring devices is a reliable partner ensuring customer training courses and after-sales support. This chapter presents only a part of a very wide range of Optomer offer covering the fibre optic measuring equipment.

MEASURING EQUIPMENT



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YOKOGAWA AQ7275 OPTICAL REFLECTOMETER

OPTOCODE S1010

AQ7275 Reflectometer

FEATURES:

- 0.8 m dead zone
- up to 45 dB dynamics
- wide range of modules
- measuring wavelength range from 850 nm (for MM fibres), up to 1650 nm (for SM fibres), depending on used module
- ideal for FTTH, metropolitan and backbone networks
- new software tailored to passive optical networks (PON) allows analysis of events beyond 1x32 splitter
- allows measuring active lines (either with 1625 nm or 1650 nm wavelength)
- built in dead zone fibre
- built in USB ports
- available connection with computer or printer
- ability to expand available memory
- ability to connect video microscope probe
- optional function of visual fault locator
- ready to work after about 10 seceonds from turning on
- big, clear, coulour display (8.4” LCD)
- includes changeable SC/PC adapter at the interferometer output port and changeable universal adapter for 2.5 mm ferrule at the output of red light source

TECHNICAL SPECIFICATIONS:

applicable fibre	model	długości fali [nm]	dynamika
SMF	735031	1650	30 dB
	735032	1310/1550	34/32 dB
	735033	1310/1550	40/38 dB
	735034	1310/1550	43/41 dB 45/43 (typically)
	735035	1310/1490/1550	34/30/32 dB
	735036	1310/1550/1625	40/38/33 dB
	735037	1310/1550/1650	40/38/30 dB
	735038	1310/1550/1625	40/38/36 dB
MMF	735041	850/1300 1310/1550	22,5/24 dB (62,5 µm core) 21/22,5 dB (50 µm core) 40/38 dB (SM)

*Available wide range of optional modules, such as visual fault detector or power meter.

ORDERING:

AQ7275/735031/SCC - AQ7275 Optical Reflectometer, operation wavelength 1650 nm, SC/PC adapter

TELECOM ACCESS CATV MAN WAN LAN FTTx PON Industry

OPTOCODE S1020

YOKOGAWA AQ1200 OPTICAL REFLECTOMETER

FEATURES:

- FEATURES:
- new model of Yokogawa reflectometer
- smaller and lighter alternative for popular AQ7275
- ideal for measuring broad metropolitan and FTTH/PON networks
- measures also through splitters and splitter cascades
- 0.8 m dead zone
- dynamics up to 32 dB
- over 70 km real measurement range
- built in USB ports
- available connection with computer or printer
- ability to expand available memory
- ability to connect video microscope probe
- single device may serve as:
  - optical reflectometer
  - light source
  - power meter (optional PON power meter)
  - OLTS- automatic bidirectional transmissive measurments
  - VFL- visual fault locator (red light source)
  - ETHERNET connection and PING tests
  - video microscope
- handy and convenient handheld device
- small size and mass (1 kg)
- clear, colour display
- ability to perform OLTS measurments in cooperation with another AQ1200 unit
- includes changeable SC/PC adapter at the output port and changeable universal adapter for 2.5 mm ferule, at the output of the red light source

AQ1200 Reflectometer

TECHNICAL SPECIFICATIONS:

model	wavelength [nm]	PM	PPM	FILTER
AQ1200C	1650	o	o	√
AQ1200B	1625	o	o	√
AQ1200A	1310/1550	o	o	-

o - optional

PM - 1310/1490/1550/1625/1625 nm Power Meter

PPM - G-PON Power Meter

FILTER -for measuring active line using 1625/1650 nm wavelengths

ORDERING:

AQ1200A/PM - AQ1200 Optical Reflectometer, operating at 1300 nm and 1500 nm, with optional power meter

TELECOM ACCESS CATV MAN WAN LAN FTTx PON Industry

NOYES OFL280 OPTICAL REFLECTOMETER

OPTOCODE S1030

OFL280 Optical Reflectometer

FEATURES:

- 0.8 m event dead zone
- 34 dB dynamics
- attenuation dead zone 3.5 m
- enables measurment before 1x64 splitter
- measures active lines
- single device may serve as:
  - optical reflectometer (1310/1550/1625/1490 nm)
  - attenuation tester (light source and power meter may work in „wave-ID” automatic wave identification mode
  - visual fault locator
  - optionally measures active lines beyond the band, using 1625 nm wavelength
  - PON power meter
- port protection against damage due to active line measurment
- improved user interface, allows accurate description of the task
- functional, analitical software makes complete report generation much easier
- easy and intuitive operating
- includes changeable SC/PC adapter at the output port and changeable universal adapter for 2.5 mm ferule, at the output of the red light source

TECHNICAL SPECIFICATIONS:

model	wavelength [nm]	PM	PPM	FILTER
OFL280-100	1310/1550	√	-	-
OFL280-101	1310/1550/1625	√	-	-
OFL280-102	1310/1490/1550	√	-	-
OFL280-103	1310/1550/1625	√	√	√

PM - 1310/1490/1550/1625 nm Power Meter

PPM - G-PON Power Meter

FILTER - for active line measurement at 1625 nm wavelength

ORDERING:

OFL280-101 - OFL280 Reflectometer, operating at 1310 nm, 1550 nm and 1625 nm wavelengths, with power meter

TELECOM ACCESS CATV MAN WAN LAN FTTx PON Industry

OPTOCODE S1040

NOYES M200 OPTICAL REFLECTOMETER

FEATURES:

- intuitive operating (modern Touch and Test (R) interface)
- wide functionality
- light and solid construction
- 26 dB dynsmics for singlemode fibres and 22 dB dynamics for multimode fibres
- suitable for performing measurements, documentation and maintaince of LAN/WAN and metropolitan networks
- up to 50 km measurement range
- can be additionally equiped with DFS1 videomicroscope probe, for inspection of connectors and adapters
- colour display with antireflective coating
- available in SM, MM and Quad (SM/MM) versions
- event Pass/Fail threshold
- co-operation with TRM(R) software
- includes changeable SC/PC adapter at the output port and changeable universal adapter for 2.5 mm ferule, at the output of the red light source

TECHNICAL SPECIFICATIONS:

model	wavelength [nm]	dynamics
M200-SM	1310/1550	26 dB
M200-MM	850/1300 1310/1550	22 dB 26 dB
M200-QUAD	850/1300	22 dB

ORDERING:

M200-SM - M200 Reflectometer, operating at 1310 nm and 1550 nm wavelengths, dedicated for single mode fibres

TELECOM ACCESS CATV MAN WAN LAN FTTx PON Industry

AFL
Back
Test
Menu
Save
VFL
M200 OTDR
NOYES

M200 Optical Reflectometer

DFS1 Inspection Probe for Noyes reflectometers

NOYES TURBOSET 500 INSERTION AND REFLECTION LOSS METER

OPTOCODE S1050

Noyes TurboTest 500 Meter

FEATURES:

- handheld tester enabling 3 measurements:
  - insertion loss
  - return loss
  - optical power
- 2 meters set ensures:
  - automatic insertion loss measurement of optical track at 1310/1550/1625 nm in both transmission directions
  - automatic return loss measurement of optical track including the return loss of the terminal connector, at 1310/1550/1625 nm in both transmission directions;
  - automatic measurement possible for tracks longer than 60 km (negligable Fresnel reflection at the end of the track)
  - remote transmission of reference measurement levels and measured data between devices
  - connection (full duplex) via built in optical phone with 45 dB dynamics
- WinTest PC software enables report creation
- includes changeable SC/PC adapter at the source port and changeable universal adapter for 2.5 mm ferule, at the power meter port

ORDERING:

T500B - Noyes TurboTest 500 Automatic Insertion and Return Loss Meter

OLTS5 INSERTION LOSS METER

OPTOCODE S1060

OLTS5 Meter

FEATURES:

- singlemode fibre insertion loss measurment on 2 wavelengths (1310/1550 or 1550/1625 nm)
- Pass/Fail thresholds, according to ISO/TIA/EN standards
- easy and intuitive Touch and Test(TM) interface
- TRMTM reporting software
- bidirectional measurment may be performed manually or automatically
- FC/PC adapters included

TECHNICAL SPECIFICATIONS:

model	wavelength [nm]			measurement range [dBm]	units of measure
	1310	1550	1625		
OLTS5-3	+	+		+ 10 to -70	dB, dBm, W
OLTS5-5		+	+	+10 to -70	dB, dBm, W
OLTS5-6	+	+		+16 do -60	dB, dBm, W

ORDERING:

OLTS5-3 - OLTS5 Insertion Loss Meter, operating at 1310 and 1550 nm, with measurement range from 10 dB to 70 dB

TELECOM ACCESS CATV MAN WAN LAN FTTx PON Industry

OPTOCODE S1070

CSM SERIES POWER METER

CSM Power Meter

FEATURES:

- easy and reliable measurement equipment
- ability to set reference power level
- modulation recogniction (tone detection)
- clear display with backlight
- compact, durable case
- ideal for installers
- includes changeable universal 2.5 mm ferrule adapter

TECHNICAL SPECIFICATIONS:

model	calibrated wavelengths [nm]									measurement range [dBm]	units of measure	functions			
	660	780	850	980	1300	1310	1490	1550	1625			tone detection	"Wave ID" detection	reference power setting	save/copy function
CSM1-1	+	+	+							+6 to -70	dB, dBm, W	+		+	
CSM1-2			+		+	+		+		+6 to -60	dB, dBm, W	+		+	
CSM1-3			+		+	+	+	+	+	+6 to -70	dB, dBm, W	+		+	
CSM1-4			+	+		+	+	+	+	+26 to -50	dB, dBm, W	+		+	

OPTOCODE S1070

OPM SERIES POWER METER

FEATURES:

- profesional equipment with full set of options
- automatic wave identification „Wave-ID”
- modulation recognision (tone detection)
- ability to set reference power level
- ability to store up to 1000 measurements in 10 folders (OPM5 series)
- ability to copy the measurements via USB (OPM5 series)

OPM4 Power Meter

TECHNICAL SPECIFICATIONS:

model	calibrated wavelengths [nm]									measurement range [dBm]	units of measure	functions			
	660	780	850	980	1300	1310	1490	1550	1625			tone detection	„Wave ID” detection	reference power setting	save/copy function
OPM4-1D	+	+	+							+6 to -70	dB, dBm, W	+	+	+	
OPM4-2D			+		+	+	+	+		+6 to -60	dB, dBm, W	+	+	+	
OPM4-3D			+		+	+	+	+	+	+10 to -75	dB, dBm, W	+	+	+	
OPM4-4D			+	+		+	+	+	+	+25 to -50	dB, dBm, W	+	+	+	
OPM5-2D			+		+	+	+	+		+6 to -60	dB, dBm, W	+	+	+	USB
OPM5-3D			+		+	+	+	+	+	+10 to -75	dB, dBm, W	+	+	+	USB
OPM5-4D			+	+		+	+	+	+	+26 to -50	dB, dBm, W	+	+	+	USB
OPM4-FTTx PON		+		+			+	+		+10 to -50 dla 1490 +20 to -50 dla 1550	dB, dBm, W				

OPM5 Power Meter

ORDERING:

OPM4-2D - OPM4 Series Power Meter, calibrated for 850 nm, 1310 nm, 1490 nm, 1550 nm wavelengths, with 6 dBm to 60 dBm measurement range, Wave ID technology, no saving data function

TELECOM ACCESS CATV MAN WAN LAN FTTx PON Industry

CSS1 LIGHT SOURCE

OPTOCODE S1080

AFL Telecommunications
CSS 1
Tone
λ
NOYES

CSS1 SM Light Source

FEATURES:

- easy and reliable device
- constant or modulated signal (270 Hz, 300 Hz, 1 kHz, 2 kHz)
- all wavelengths available from one port
- clear display with backlight
- compact and durable case
- ideal for installers
- includes changeable SC/PC adapter

TECHNICAL SPECIFICATIONS:

model	emitted wavelengths [nm]									output power [dBm]	stability	functions		number of ports
	660	780	850	980	1300	1310	1490	1550	1625			tone generation	„Wave ID" generation	
CSS1-MM			+		+					-20	±0,1dB/ 1 hour	+		1
CSS1-SM						+		+		0	±0,05dB/ 1 hour	+		1

OLS LIGHT SOURCE

OPTOCODE S1080

AFL Telecommunications
OLS2 DUAL
NOYES

OLS2-Dual Light Sourcel

AFL Telecommunications
OLS4
NOYES

OLS4 Light Source

AFL Telecommunications
OLS7
NOYES

OLS7 Light Source

FEATURES:

- advanced light source
- „Wave-ID" identification
- continuous or modulated signal
- clear display
- wide variety of models for different use
- includes changeable SC/PC adapter

TECHNICAL SPECIFICATIONS:

model	emitted wavelengths [nm]									output power [dBm]	stability	functions		number of ports
	660	780	850	980	1300	1310	1490	1550	1625			tone generation	„Wave ID" generations	
OLS1-1C	+		+							-10 for 660 -20 for 850	±0,1dB/ 8 hour			2
OLS1-2C			+		+					-20	±0,1dB/ 8 hour.			2
OLS1-Dual			+		+					-20	±0,1dB/ 8 hour	+	+	1
OLS2-Dual						+		+		0	±0,05dB/ 1 hour	+	+	1
OLS4			+		+	+		+		-20 for 850 -20 for 1300 0 for 1310 0 for 1550	±0,1dB/ 1 hour	+	+	2
OLS7-3						+		+	+	-5	±0,05dB/ 1 hour	+	+	1
OLS7-FTTH						+	+	+		-5	±0,05dB/ 1 hour	+	+	1

ORDERING:

OLS2-Dual - 1310 nm and 1550 nm wavelengths OLS series light source, both wavelengths via single port, with Wave ID technology and tone generation

TELECOM ACCESS CATV MAN WAN LAN FTTx PON Industry

OPTOCODE S1090

OFI OPTICAL FIBRE IDENTIFICATOR

FEATURES:

- identifies the presence and transmission direction of optical signal in a fibre
- detectable through 250 µm, 900 µm coatings and 2 mm or 3 mm cable outer sheaths
- wavelength: 800/1700 nm
- tone detection: 270 Hz to 2000 Hz
- universal inset for all coating and cable jacket diameters
- OFI 200 D - signaling modulation and direction of transmission via diodes (visible under all conditions)
- OFI 400 - LCD display and ability to perform power measurement through cable sheath
- OFI FTTx - detects ONT presence in passive optical networks

TECHNICAL SPECIFICATIONS:

model	OFI 200D	OFI 400	OFI FTTx
wavelength [nm]	1260-1700	800- 1700	1310
introduced attenuation (typical)	0.6 dB (1310 nm) 2.5 dB (1550 nm)	0.6 dB (1310 nm) 2.5 dB (1550 nm)	<1 dB (1550 nm)
tone detection	2000±100 Hz	270 - 2000 Hz	ONT
sheath type	250 mm, 900 mm 2 or 3 mm loose sheaths.	250 mm, 900 mm 2 or 3 mm loose sheaths	2 mm, bending resistant fibre (radius 15 mm)
powering	9 V battery	9 V battery	2x1,5 V AA
weight [g]	210	210	230

ORDERING:

OFI 400 - Optical Fibre Identifier with LCD display and power meter

TELECOM ACCESS CATV MAN WAN LAN FTTx PON Industry

TRAFFIC
NO SIGNAL
TONE
LOW BATT
OFI-200
NOYES
AFL Telecommunications
OPTICAL FIBER IDENTIFIER

OFI 200 D Fibre Identifier

AFL Telecommunications
-18.0
270
NO SIGNAL
Set Ref
OFI-400
NOYES

OFI 400 Fibre Identifier

ONT Active
Not Detected
OFI-FTTx
AFL Telecommunications
NOYES
ACTIVE ONT DETECTOR

OFI FTTx Fibre Identifier

VOA6-SM TUNABLE ATTENUATOR

OPTOCODE S1110

1550nm
11.85 dB
VOA6 Optical Attenuator
AFL
NOYES

VOA6-SM Tunable Attenuator

FEATURES:

- used for bit error rate (BER) estimation and systems' tolerance for optical link attenuation
- fast and easy tuning via thumb operated knob
- saves last attenuation setting after the device was turned off
- splash resistant, mechanically durable case
- used as laboratory attenuator, attenuation range 2 dB to 60 dB
- return loss over 45 dB for DFB laser
- wavelength range 1260 nm to 1650 nm
- calibrated wavelengths: 1310 nm, 1490 nm, 1550 nm, 1625 nm
- dedicated for single mode fibres
- changeable FC/PC adapters included

ORDERING:

VOA6-SM - Tunable Attenuator for single mode fibres

VOA5-MM TUNABLE ATTENUATOR

OPTOCODE S1120

VOA5-MM Tunable Attenuator

FEATURES:

- used for bit error rate (BER) estiamation and systems' tollerance for optical link attenuation
- fast attenuation tuning (from 0 dB to 60 dB in less than 3 seconds)
- handy and machanically durable construction
- saves last attenuation setting after the device was turned off
- used as laboratory attenuator, attenuation range 0 dB to 60 dB
- wavelength range 850 nm to 1300 nm
- calibrated wavelengths: 850 nm, 1300 nm
- dedicated for multimode fibres
- changeable FC/PC adapters included

ORDERING:

VOA5-MM - Tunable Attenuator for multimode fibres

SVA1 TUNABLE ATTENUATOR

OPTOCODE S1130

SVA 1
SINGLEMODE
ATTENUATOR
FINE
COARSE
NOYES

SVA1 Tunable Attenuator

FEATURES:

- used for bit error rate (BER) estimation, systems' tollerance for optical link attenuation and as a lab attenuator
- budget solution for single mode fibre attenuator
- attenuation up to 60 dB
- coarse and precise tuning
- light and durable
- ideal for field use
- changeable FC/PC adapters included

ORDERING:

SVA1 - Tunable Attenuator for singlemode fibres

TELECOM ACCESS CATV MAN WAN LAN FTTx PON Industry

OPTOCODE
S1140

FTS OPTICAL PHONE

FEATURES:

- full duplex on single fibre
- digital modulation
- non invasive connection (does not require cutting the fibre)
- changeable SC/PC adapters included

TECHNICAL SPECIFICATIONS:

	FTS 1	FTS-2 1310	FTS-2 1550
source type	LED	laser	laser
dynamics (SM/MM)	12/20 dB	45 dB	45 dB
range (SM/MM)	50/10 km	113 km	180 km
fibre type	SM/MM	SM	SM
operating temperature [°C]:	0 do + 50		

ORDERING:

FTS-2 1310 - Optical Phone with 113 km range, operating at 1310 nm wavelength

FTS1
Fiber Optic Talk Set
NOYES
FTS 2
Fiber Optic Talk Set
NOYES

FTS Optical Phone

OPTOCODE
S1150

SOC, UCI ADAPTERS

FEATURES:

- enable customizing the meter interface to operate with all standards of optical connections

TECHNICAL SPECIFICATIONS:

	symbol	description
Adapter SOC	1000	SOC Adapter E-2000
	1020	SOC Adapter FC-PC
	1030	SOC Adapter ST-PC
	1062	SOC Adapter SC-PC
Adapter UCI	AE2-10	UCI-APC Adapter, E-2000
	APC-108	UCI-APC Adapter, FC-PC and APC (2,15 mm key)
	APC-109	UCI-APC Adapter, FC-APC (2 mm key)
	ASC-108	UCI Adapter, SC-PC/APC
	ATS-108	UCI Adapter, ST-PC

Other standards of adapters are also available

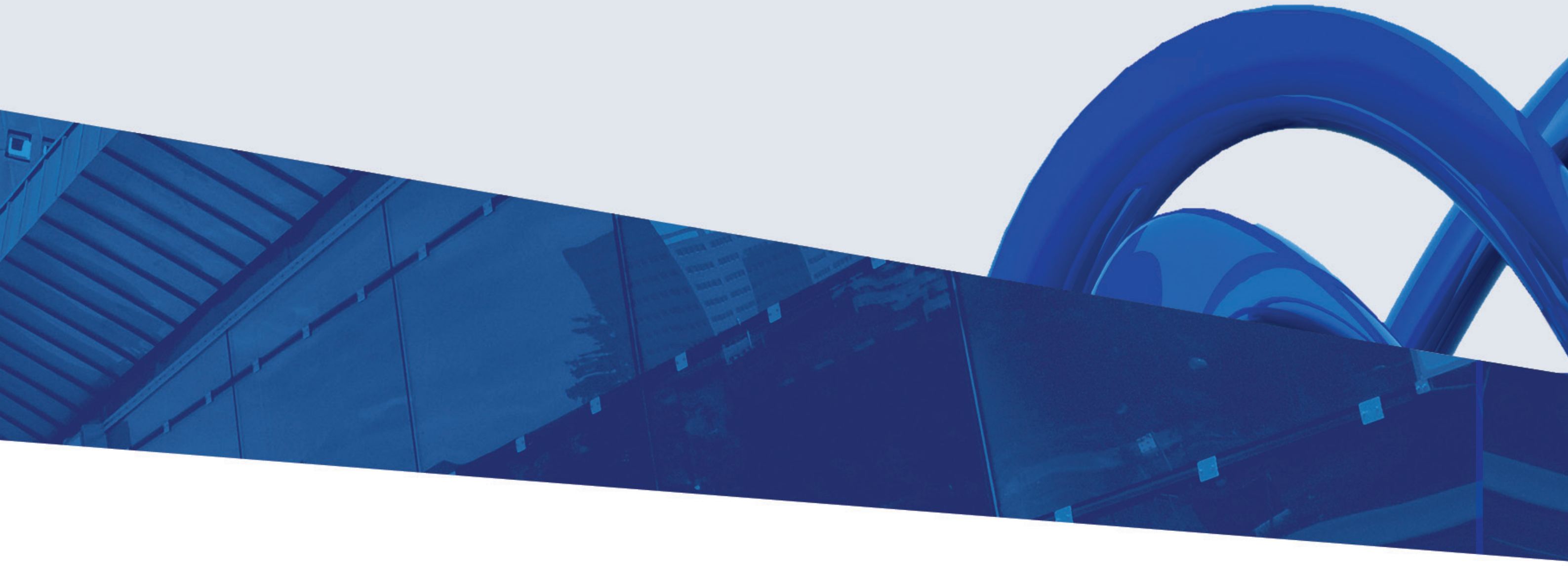
ORDERING:

AE2-10 - UCI (Universal Connector Interface) for E-2000 standard connector

TELECOM xWDM Industry

SOC Adapters

11

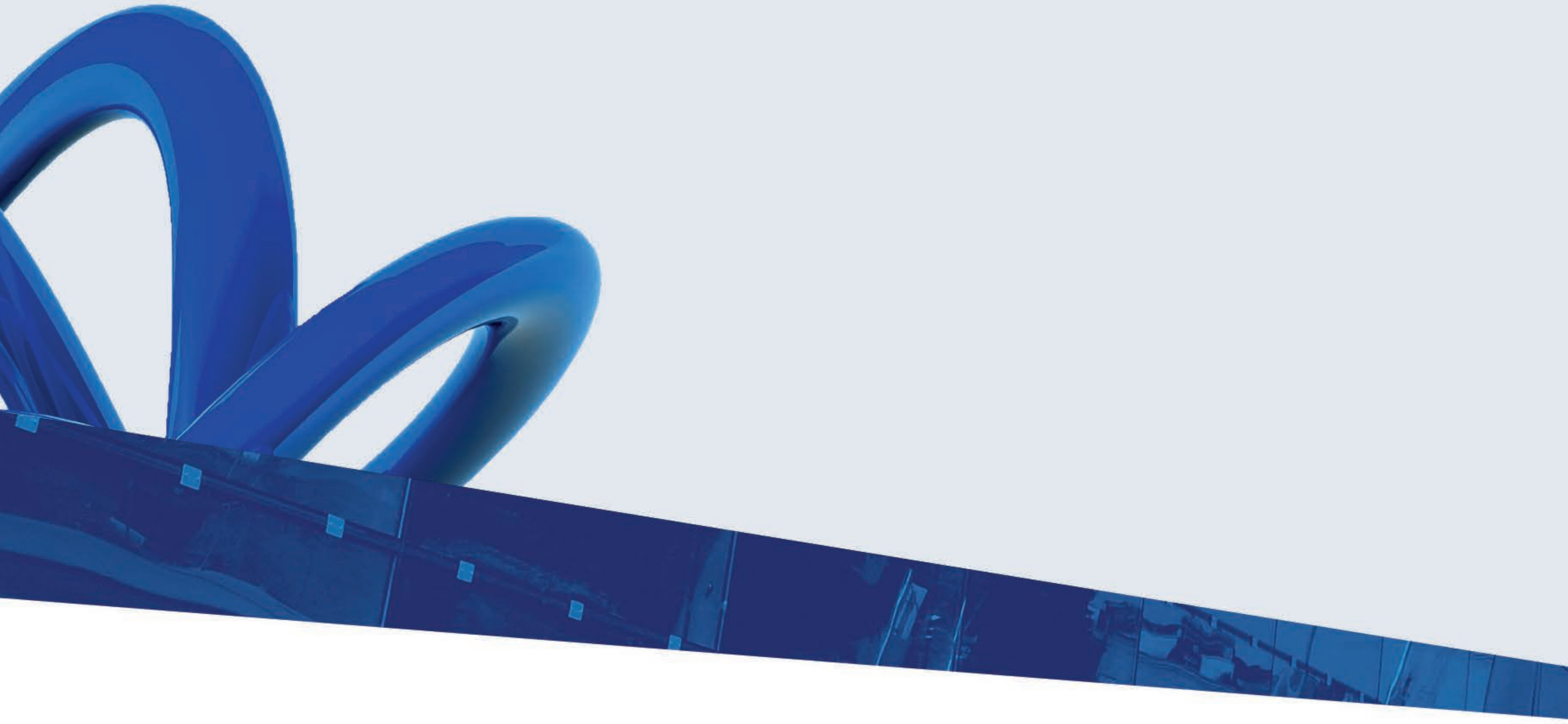


In addition to a wide range of passive products, OPTOMER offers the highest quality active equipment, dedicated for fibre optic networks. Depending on the area of application, the active devices offered by Optomer can be divided into four product groups: optical multiplexing devices, products dedicated for fiber to the office networks, access platforms, active devices for industrial applications.

The convergence of LAN-WAN networks on the Metropolitan Area Network level requires the new, reliable, high-throughput solutions. MICROSENS, the OPTOMER's partner, has developed new solutions supporting the migration in metropolitan networks. CWDM/DWDM systems allow the metropolitan network operators, Internet providers and enterprises to increase the bandwidth quickly and economically. The Microsens CWDM/DWDM systems have a modular construction. The integrated optical backplane, as the special feature, protects mechanically the passive fiber optic components, improves the system performance and makes the maintenance of the system easier and more convenient.

The indoor fibre optic networks combine the highest quality and safety with the lowest cost of installation and maintenance. The Microsens Fiber To The Office concept, based on the family of equipment designed for installation in cable ducts, has become a popular and widely used solution in corporate networks. With the latest solutions the convergence of all telecommunication services in a fiber-optic network has already become a reality.

ACTIVE EQUIPMENT



BRIDGES AND MEDIA CONVERTERS 198
OPTICAL TRANSPORT PLATFORMS CWDM/DWDM 198
INDUSTRIAL CONVERTERS 198
FTTO COMPONENTS 199
ACCESS PLATFORM 199
SFP AND SFP+ MODULES 200

BRIDGES AND MEDIA CONVERTERS

OPTOCODE U1010

Bridges and media converters

FEATURES:

- conversion between electrical and optical medias
- economical migration into fibre optic technology
- available in stand-alone, multi-port or modular versions
- fast and easy installation
- significant improvment in transmission range

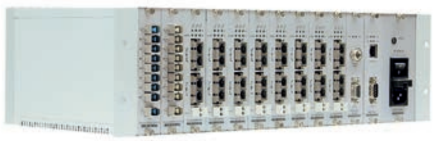
APPLICATION:

- media converters allow connection between networks of the same technology but utilizing different media: UTP (Unshielded Twisted Pair) cable and the fibre
- bridges are constructed to control the speed of transmission for different types of Ethernet

TELECOM ACCESS WAN LAN FTTx Industry

OPTICAL TRANSPORT PLATFORMS CWDM/DWDM

OPTOCODE U1020



CWDM/DWDM transport platform

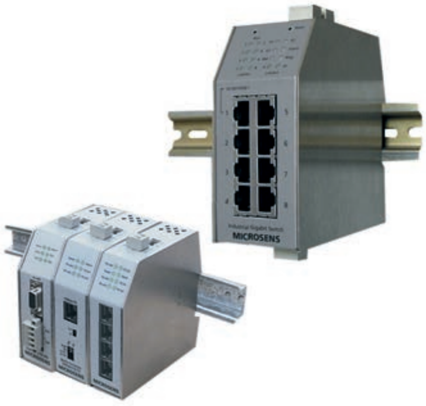
FEATURES:

- low costs
- high channel densit
- flexible flow increment of fibre channel
- modular construction
- expandable

TELECOM MAN WAN xWDM

INDUSTRIAL CONVERTERS

OPTOCODE U1030



Industrial converters

FEATURES:

- deployable in harsh environmental-industrial conditions,
- faultfree surveillance and industrial process steering
- possibility to mount the peripherals on the DIN 35 mm bus
- industrial converters Ethernet/Fast Ethernet, serial port converters, RS-232/v.24 multiplexers and power supply adaptors are in offer

Industry

OPTOCODE U1040

FTTO COMPONENTS

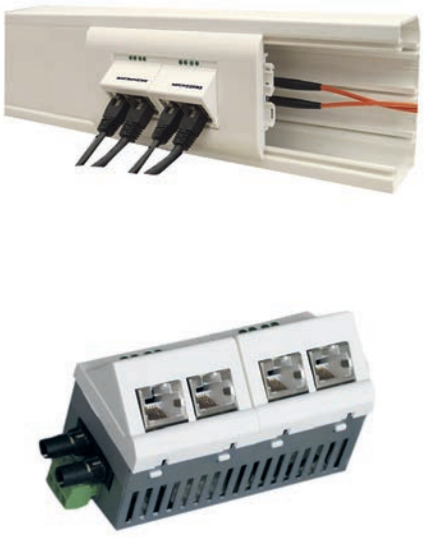
FEATURES:

- tool-free set-up
- compact solution
- high speed data transmission
- complete system of swiches, converters and network cards
- convergence of all services into one fibre optic network
- high network security and reliability

APPLICATION:

- indoors coroprate networks

TELECOM ACCESS LAN FTTx



FTTO components

OPTOCODE U1050

ACCESS PLATFORM

FEATURES:

- variety of technologies and protocols
- elastic adaptation to changing requirements
- open modular system
- wide variety pf modules
- telecommunication and industrial interfaces conversion
- 19” or stand-alone casess

APPLICATION:

- connection of corporate network with core metropolitan network

TELECOM ACCESS CATV MAN WAN LAN xWDM Industry

Access platform

SFP AND SFP+ MODULES

OPTOCODE U1060

SFP and SFP+ modules

FEATURES:

- wide variety of SFP and SFP+ modules
- dedicated for many solutions
- vast choice of standard and link budget
- various inferfaces
- attested solutions of well-known companies (Microsens, Finisar)

TECHNICAL SPECIFICATIONS:

module	transmission speed	range
	SFP	
FWLF15197Dxx	1.25 Gb/s	80 km
FWLF15217Dxx	2.67 Gb/s	50 km
FWLF1521P2Nxx	2.67 Gb/s	50 km
FWLF1524P2Vxx	4.25 Gb/s	40 km
FWLF1631xx	2.67 Gb/s	80 km
FWLF1631Rxx	2.67 Gb/s	160 km
FWLF1634RLxx	4.25 Gb/s	80 km
FTLF2318P1BCL	1.25 Gb/s	10 km
FTLF2318P1BNL	1.25 Gb/s	10 km
FWLF2519C1Cxx	1.25 Gb/s	50 km
FTLF1217P2xTL	200 Mb/s	2 km
FTLF1318P2xCL	1.25 Gb/s	10 km
FTLF1318P2xTL	1.25 Gb/s	10 km
FTLF1419P1xCL	2.125 Gb/s	55 km
FTLF1518P1BTL	1.25 Gb/s	90 km
FTLF1519P1xCL	2.125 Gb/s	90 km
FTLF1519P1xNL	2.125 Gb/s	90 km
FTLF1619P1xCL	2.125 Gb/s	115 km
FTLF1324P2xTL	4.25 Gb/s	4 km
FTLF1324P2xTV	4.25 Gb/s	4 km
FTLF1424P2xCR	4.25 Gb/s	10 km
FTLF1424P2xCD	4.25 Gb/s	10 km
FTLF1424P2xTR	4.25 Gb/s	10 km
FTLF1424P2xTD	4.25 Gb/s	10 km
FTLF1424P2xCL	4.25 Gb/s	30 km
FTLF1424P2xCV	4.25 Gb/s	30 km
FTLF1323P1xTR	155 Mb/s	15 km
FTLF1323P1xTL	155 Mb/s	40 km
FTLF1523P1xTL	155 Mb/s	80 km
FTLF1322P1xTR	622 Mb/s	15 km
FTLF1422P1xTL	622 Mb/s	40 km
FTLF1522P1xTL	622 Mb/s	80 km
FTLF1321P1xTL	2.67 Gb/s	2 km
FTLF1421P1xCL	2.67 Gb/s	15 km
FTLF1421P1xTL	2.67 Gb/s	15 km
FTLF1521P1xCL	2.67 Gb/s	15 km
FTLF1721P1xCL	2.67 Gb/s	40 km
FTLF1721P2xTL	2.67 Gb/s	40 km
FTLF1621P1xCL	2.67 Gb/s	80 km
FWDM-1619-7D-xx	1.25 Gb/s	100 km
FTLF1318P3BTL	1.25 Gb/s	10 km
FWLF1621P2Txx	2.67 Gb/s	50 km

OPTOCODE U1060

SFP AND SFP+ MODULES

TECHNICAL SPECIFICATIONS:

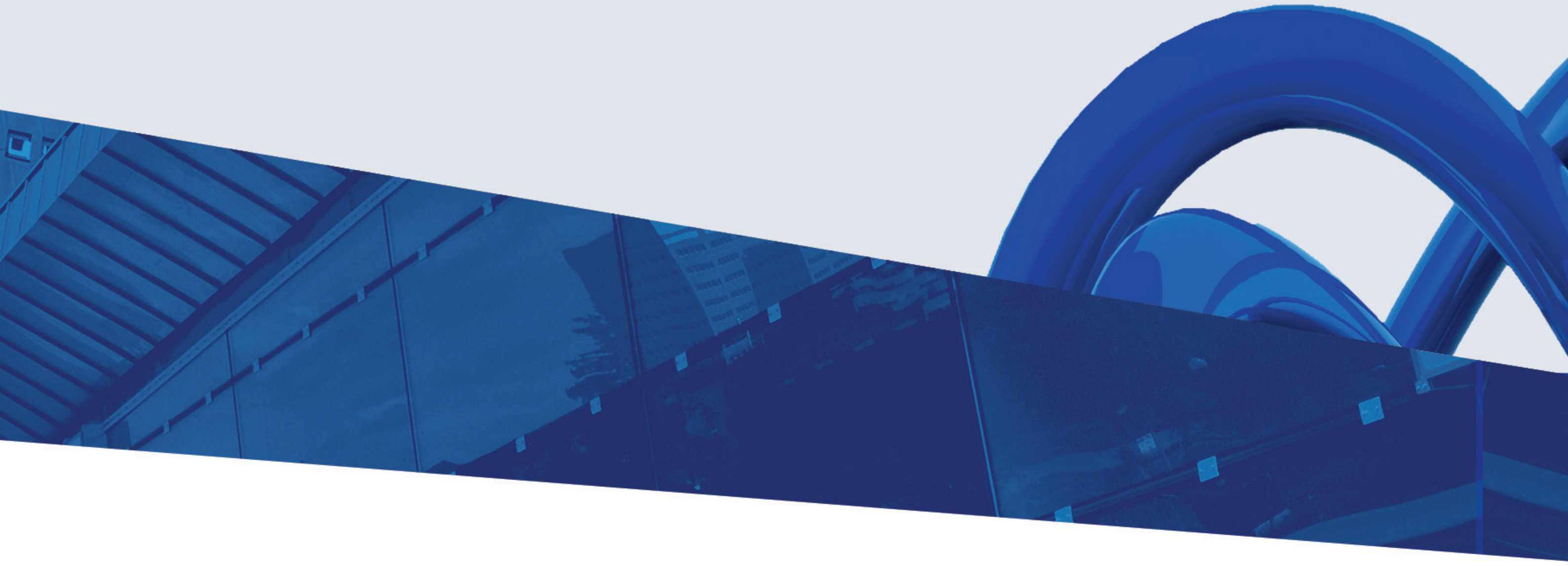
module	transmission speed	range
	SFP	
MS100210*	1.0625..1.25 Gb/s	10 km
MS100211	1.0625..1.25 Gb/s	25 km
MS100213*	1.0625..1.25 Gb/s	50 km
MS100214D	1.0625..1.25 Gb/s	80 km
MS100215*	1.0625..1.25 Gb/s	120 km
MS100190*	125 Mb/s	2 km
MS100191*	125 Mb/s	15 km
MS100221DA	1.25 Gb/s	10 km
MS100221DB	1.25 Gb/s	10 km
MS100223DA	1.25 Gb/s	20 km
MS100223DB	1.25 Gb/s	20 km
MS100224DA	1.25 Gb/s	40 km
MS100224DB	1.25 Gb/s	40 km
MS100228DA	1.25 Gb/s	80 km
MS100228DB	1.25 Gb/s	80 km
MS100191A	125 Mb/s	20 km
MS100191B	125 Mb/s	20 km
MS100364D	1.0625..4.25 Gb/s	4 km
MS100366D	1.0625..4.25 Gb/s	10 km
MS100368D	1.0625..4.25 Gb/s	30 km
MS100241*	1.0625..2.125 Gb/s	10 km
MS100242*	1.0625..2.125 Gb/s	50 km
MS100243*	1.0625..2.125 Gb/s	80 km
MS100244*	1.0625..2.125 Gb/s	110 km
MS100180	155..266 Mb/s	2 km
MS100181	155..266 Mb/s	15 km
MS100060D	100..2488 Mb/s	2 km
MS100061D	100..2488 Mb/s	15 km
MS100063D	100..2488 Mb/s	40 km
MS100062D	100..2488 Mb/s	40 km
MS100064D	100..2488 Mb/s	80 km
MS100040D	622 Mb/s	15 km
MS100041D	622 Mb/s	40 km
MS100042D	622 Mb/s	80 km
MS100193	155 Mb/s	2 km

TECHNICAL SPECIFICATIONS:

module	transmission speed	range
	SFP+	
FTLX1471D3BCL	10.5 Gb/s	10 km
FTLX1471D3BCV	10.3 Gb/s	10 km
FTLF1328P2BNV	8.5 Gb/s	1.4 km
FTLF1428P2BNV	8.5 Gb/s	10 km
FTLX1471D3BNL	10.5 Gb/s	10 km
FTLX1671D3BCL	10.3 Gb/s	40 km
FTLX1471D3BTL	10.5 Gb/s	10 km
FTLX1472M3BCL	11.3 Gb/s	10 km

SFP and SFP+ modules

TELECOM MAN WAN LAN xWDM



A

ABSORPTION IN A FIBRE
Absorption of energy by the fibre’s material.

ADAPTER/CONNECTOR (FIBRE OPTICS)
Centering element coupling two fibre connectors.

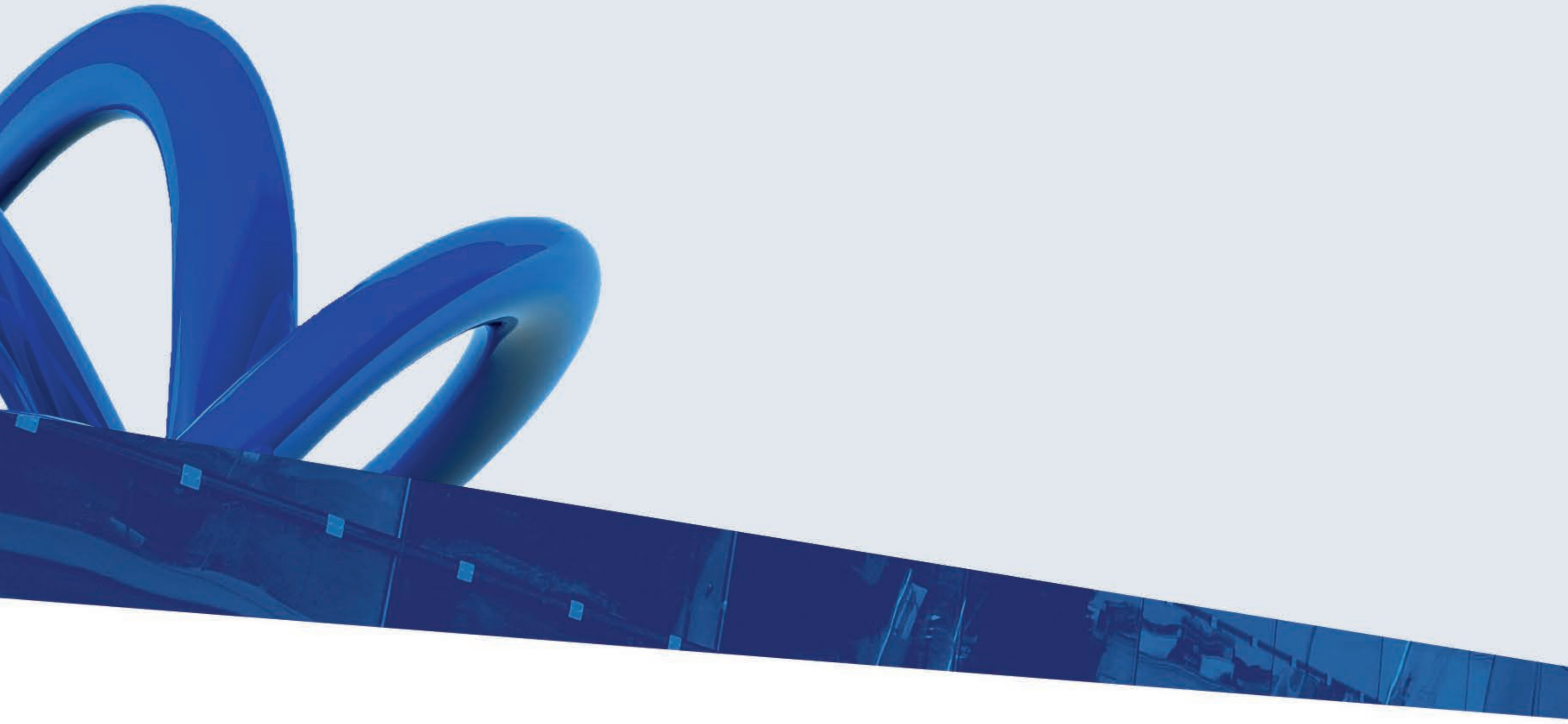
ADSS
All Dielectric Self-Supporting overhead cable.

ACCEPTANCE CONE
An acceptance cone is formed based on the critical angle condition of Total Internal Reflection. In that way, solid angle of the cone is determined. Within its radius, the energy injected goes into the core, while any energy inserted with an angle higher than this solid angle results in leakage.

ATTENUATION
The loss of optical power per unit length of a fibre. Does not introduce distortions to the carried signal. Attenuation is expressed in decibels per kilometer (dB/km) or decibels per meter (dB/m).

ATTENUATOR
Optical network element used for attenuating optical signal by a given value expressed in dB.

GLOSSARY



C

CABLELOK
Mechanical, non-heat shrink cable sealing for fibre optic enclosures.

FBT COUPLER
Passive optical element made by streching twisted fibre units over flame of a gas-jet.

CLADDING
Layer surrounding fibre's core, having lower refractive index than the core.

CWDM
Channel multiplexing method with coarse wavelength division allowing on one fibre for up to 18 channels separated by 20 nm distance.

CIRCULATOR (FIBRE OPTICS)
Pasywny element optyczny, pozwalający na odseparowanie fal świetlnych o tej samej długości, przesyłanych w przeciwnych kierunkach w światłowodzie. W systemach telekomunikacyjnych stosowany, jako zwielokrotnienie falowe umożliwiające nadawanie i odbiór sygnału optycznego o tej samej długości, za pomocą pojedynczego włókna światłowodowego.

CONNECTOR (FIBRE OPTICS)
Detachable connection allowing for proper transmisson between paired fibes and ensuring reliable, mechanical contact due to proper polishing and fibre centering.

CORE (FIBRE OPTICS)
Central part in fibre's cross-section, surrounded by cladding of lower refractive index. Light is transmitted through the core by the Total Internal Reflection phenomena, occurying on the boundary of core and cladding.

D

dB
Decibel. Logarithmic unit describing ratio of two values. In fibre optic telecommunication it is used for specifying insertion losses, return losses, isolation.

dBm
A logarithmic unit relative to 1 mW of power.

DWDM
Wavelength mulitiplexing with dense channel distribution. Enables for transmissionmultiple wavelengths, separated by e.g. 0.4 nm, 0.8 nm, 1.6 nm on one fibre.

DISPERSION
Phenomena arising in optical path causing a distortion in time of a signal that results in pulse deformation and broadening.

DISPERSION -CHROMATIC
Degradation of an optical signal caused by non-ideal spectrum width of a pulse. The chromatic dispersion is composed of waveguide and material dispersions. Problematic mainly for single-mode fibres.

DISPERSION - WAVEGUIDE
Signal degradation resulting from the fact that part of its power propagates in fibre's core and part in cladding (in materials of different refractive indices). The amount of light that propagated in either of the two layers is dependent on frequency of optical wave.

DISPERSION - MATERIAL
Pulse deformation caused by the dependence of the refractive index on wavelength.

DISPERSION - MODAL
Phenomena occurring in multi-mode fibres, causing pulse broadening. Arises from different group velocities for different modes in a considered fibre.

DISPERSION - POLARIZATION MODE
Pulse degradation resulting from different optical paths for perpendicular components of light's mode.

DISTRIBUTION BOX (FIBRE OPTICS)
Element of an optical network, used for termination of feeder cables. Ensures proper organisation and protection of splices, storage of fibre supply and connection to active devices.

E

ENCLOSURE (FIBRE OPTICS)
Protection of undetachable fibre connections (splices).

F

FERRULE
Precisely made sleeve for centric fixing and stiffening optical fibre in a connector.

FTTA
Fiber To The Antenna - variation of FTTX technology, employed in wireless radio systems. Signal is fed by means of optical link from a Base Transceiver Station to Remote Radio Heads, situated in the vicinity of one or more antennas.

FTTB
Fiber To The Building - variation of FTTX technology, where fibre is delivered directly to a building and terminated in an indoor distribution frame.

FTTC
Fiber To The Curb - variation of FTTX technology, where fibre is delivered to a group of buildings and terminated in a street distribution frame.

FTTD
Fiber To The Desk - variation of FTTX technology, where fibre is delivered directly to subscriber's desk.

FTTH
Fiber To The Home - variation of FTTX technology, where fibre is delivered directly to subscriber's outlet.

FTTx
Fiber To The x - optical fibre network infrastructure technology. ‚x' specifies the place where optical fibre is delivered directly.

FRP
Fibre Reinforced Plastic - plastic reinforced with glass fibre, employed as e.g. strengthening element for fibre optic cables.

G

GRADED-INDEX FIBRE

Optical fibre where refractive index decreases with the distance for the center of a core. On the boundary with cladding, it reaches the value of cladding's refractive index. Graded-index fibres are multi-mode fibres (large Numerical Aperture) of small dispersion.

GBIC

GigaBit Interface Converter - transceiver employed in telecomm solutions. An optical or copper interface for active devices. Because of its large dimensions, was succeded by SFP or Mini-GBIC.

GPON

Gigabit Passive Optical Network - passive optical network standard based on sharing signal from one fibre on multiple users.

H

HDPE

High Density Poliethylen, a material from which fibre optic cables' outer sheaths,telecom manholes and underground plastic pits are made.

HYBRID ADAPTER/CONNECTOR

Centering element coupling two fibre connectors of different standards.

I

IK

Coefficient describing equipment's ability to resist mechanical impacts.

IP

Coefficient describing equipment's ability to resist environmental influence - fluids and solids.

ISOLATOR (FIBRE OPTICS)

Optical element that passes light only in one direction.

IMMERSION FLUID/GEL

Material, whose refractive index value is close to the refractive index of fibre's core. Increases reflection losses.

L

LAN

Local Area Network - a type of computer network which interconnects devices in a constrained neighbourhood.

LASER

Light Amplification by Stimulated Emission of Radiation. Optical device emitting coherent beam of electromagnetic radiation.

LSOH

Low Smoke Zero Halogen - halogen free material, not sustaining flames and emmiting a limited amount of fumes while burning. Meets the fire requirements for indoor installations.

LOSSES - REFLECTION

Ratio between power inserted into optical link and reflected power by the end of the link expressed with a positive sign. Describing the reflected power in a technical specs of a device, it is advised to use term: reflectance.

LOSSES - INSERTION

Power losses resulting from inserting new element into optical link. Expressed in logarithmic form (dB) as a ratio between power of light reaching receiver before insertion to the power received after insertion.

M

MICRODUCTS

System of microtubes alternative to traditional telecomm ducts.

MULTI-MODE FIBRE

Optical fibre able to carry discrete modes of the same wavelengths but different optical paths.

MICROTUBE

Tube of small diameter (3.5 up to 14 mm) employed in microduct systems.

MINIMUM BENDING RADIUS

Parameter describing the maximum degree to which cable can be bent that will not be detrimental neither for the transmission parameters nor the internal structure.

MODE

Distribution of an electromagnetic field in a fiber corresponding to an angle of propagation of a wave.

xWDM MULTIPLEXER

Element of an optical network coupling signals transmitted on different wavelengths into one fibre. ‚x’ represents density of wavelength division.

N

NUMERICAL APERTURE

Describes the ability of an optical fiber to accept useful energy from a transmitting/amplifying device.

O

ODF

Optical Distribution Frame - a passive construction for cable termination, interconnection between devices and network organization

OLT

Optical Line Termination - distribution device, central unit.

ONT

Optical Network Termination at the end user.

ONU

Optical Network Unit - device terminating optical network in a local distrubution point.

OPGW

Optical Ground Wire with a central tube containing optical fibres.

OPTICAL FIBRE

Transmission medium made of dielectric material, composed of core and cladding. In order to guide light in the core, the cladding has to have lower refractive index than the core.

P

PATCHCORD

Fragment of optical fibre ended by a connector on each side.

PATCHING

It is a possibility of performing easy reconnections with fibre optic connectors..

PIGTAIL

Fragment of optical fibre ended by a connector on one side.

POF

Plastic Optical Fibre, a fibre where core is made of plastic instead of glass.

PON

Passive Optical Network - network utilizing single-mode fibre as a transmission medium between OLT central device and subscriber’s termination ONT. Signal in the PON network is distributed by passive optical splitters.

PRIMARY FIBRE SHEATH

Protective layer laid straight on an optical fibre during its production process. Protects against harmful environment.

R

CONNECTOR REFLECTANCE (FIBRE OPTICS)

The ratio between input power and power reflected from an optical device or end-device, expressed in dB with minus sign. For characterizing the reflected power from the end of an optical link, it is advised to use the term: return losses.

REFLECTOMETER, OTDR (FIBRE OPTICS)

Measurement device for analysing parameters of optical fibre links. Enables locating events like connections, splices, damages and bends.

REFRACTIVE INDEX

Ratio between speed of light in vaccum and speed of light in a given medium.

S

SFP

Small From-factor Pluggable or Mini-GBIC is a compact transceiver widely used in telecommunications. Constitutes optical or copper interface for active devices. Because of small dimensions, replaces GBIC.

PLC SPLITTER

Passive optical network element splitting optical power, manufactured in planar technique.

SINGLE-MODE FIBRE

Fibres having core diameter and numerical aperture small enough to accept and guide only one mode.

T

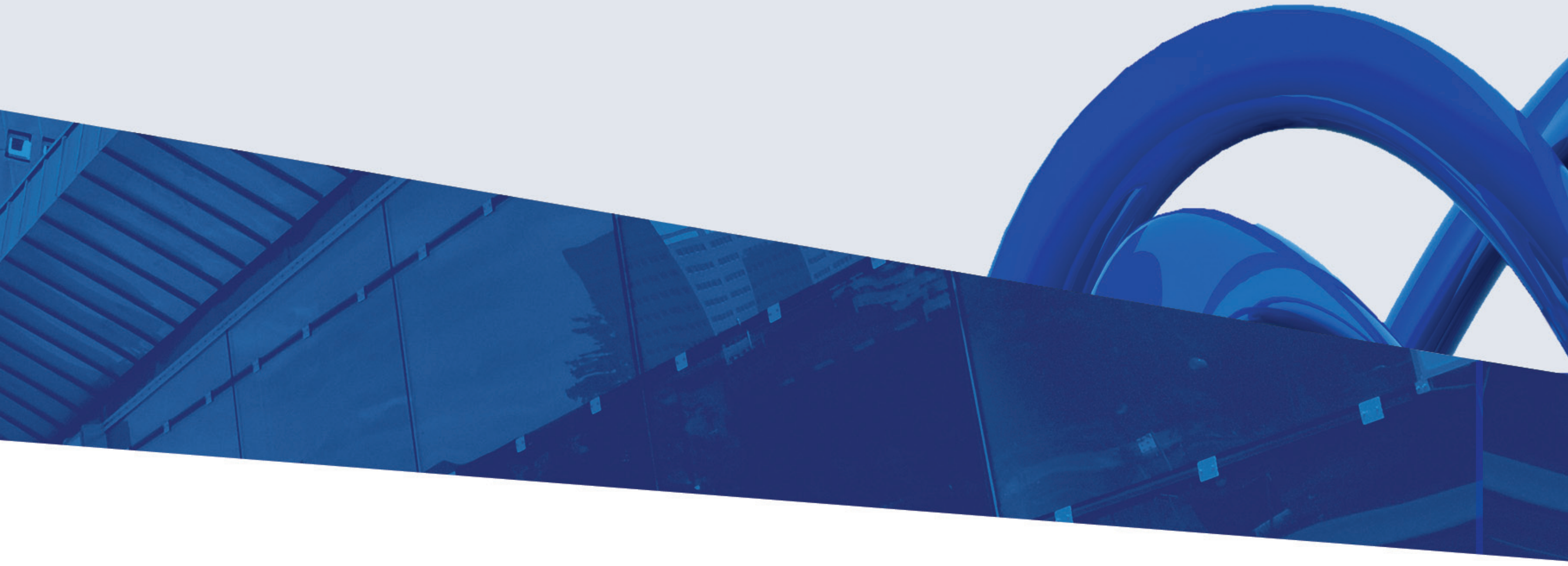
TOTAL INTERNAL REFLECTION

Principle of operation of an optical fibre. Phenomena taking place on a boundary of two medias of different refractive indices.

W

WDM

Wavelength Division Multiplexing - optical transmission technique, based on multiplexing in wavelength domain. WDM allow for parallel, simultaneous and independent transmission of many optical waves of different lengths in one fibre.



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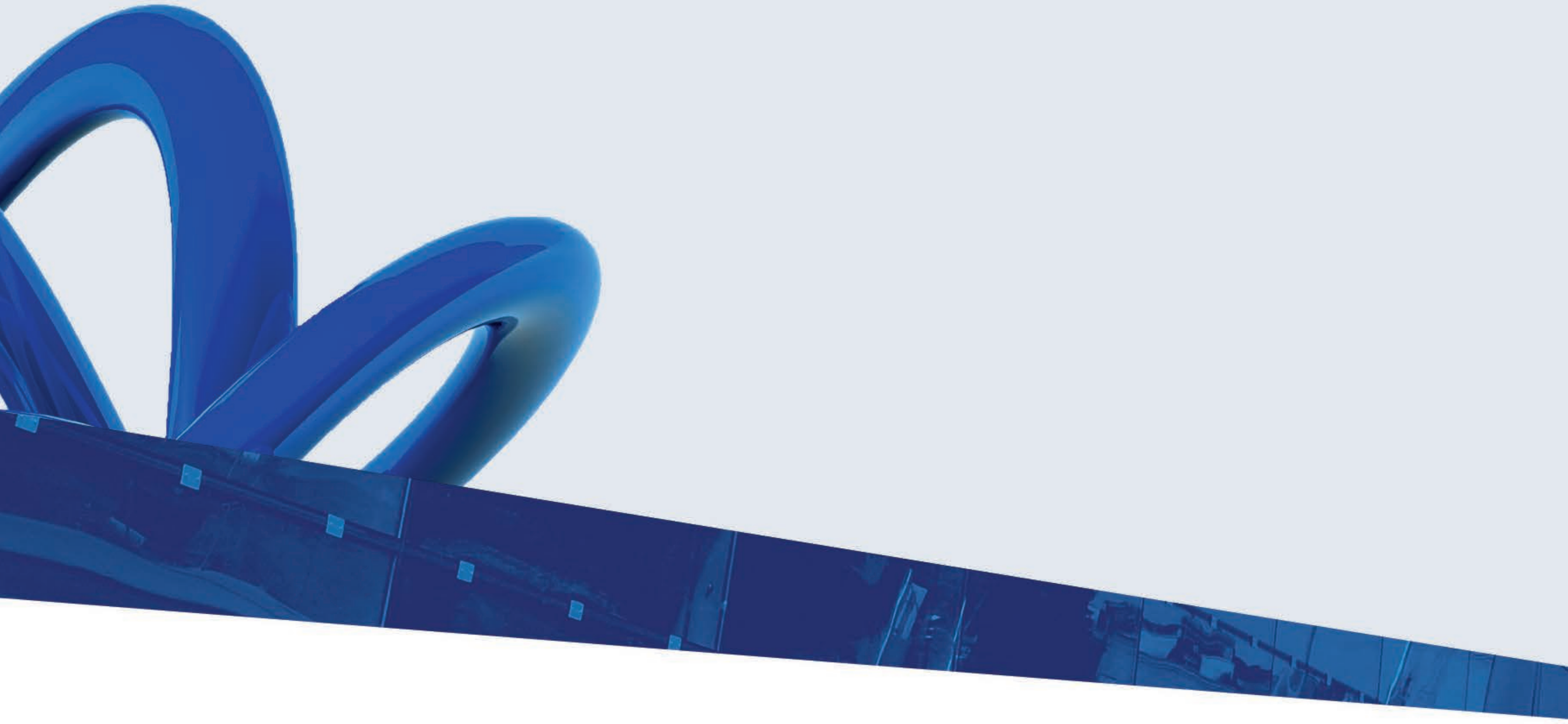

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